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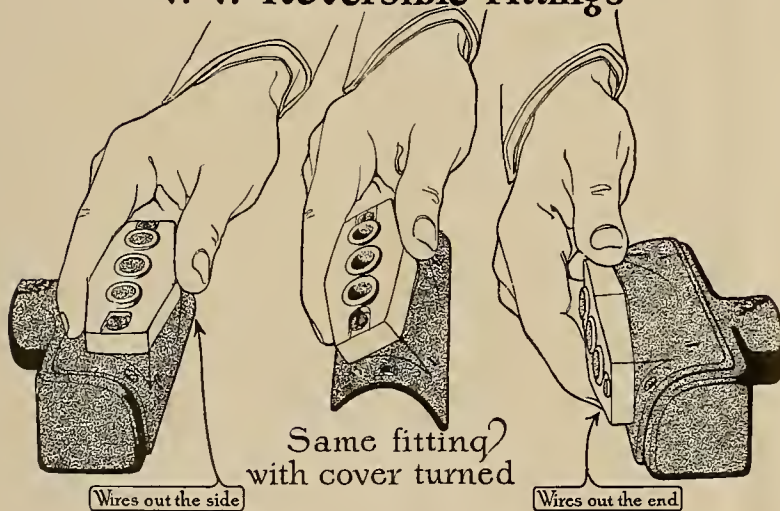
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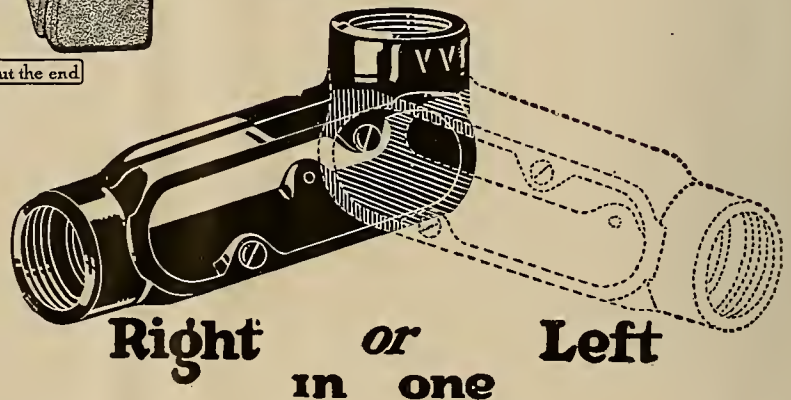
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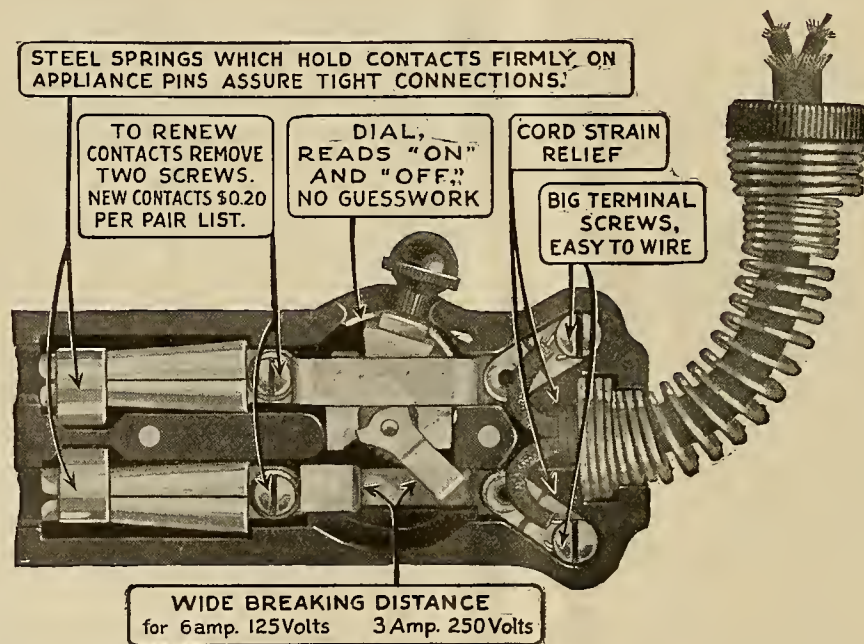


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STRAWS SHOW WHICH WAY THE WIND BLOWS

ANY observer of climatic changes within the electrical industry who has been watching the cross-currents, eddies, and local showers might well forecast a storm brewing. To be exact, all does not appear to be well, particularly in the merchandising and contracting branches of this industry.

It is generally admitted that thousands of dollars of advertising spent for the promotion of convenience outlets, and better residence wiring upon which rests the sale of electrical appliances, are being wasted because the major portion of residence wiring is being done by irresponsible curbstone contractors who are without the pale of organized educational work, and who are interested only in doing the job cheaply.

Recognized contractor-dealers and strictly electrical stores are being cast aside as the preferred medium through which electrical appliances are merchandised. Drug, hardware, department and furniture stores are being used in preference. While this may cause dissatisfaction in some quarters, it is inevitable that these mediums should be utilized in order to properly distribute the increasing number of appliances manufactured. Distribution of appliances cannot be restricted to electrical stores.

But the problem of the curbstone contractor is a real one and demands attention. Different men within the electrical industry have gradually been awakening to this fact, and have been variously casting around for a remedy. One large jobbing house has sought to over-

come the first evil mentioned by having a distinguishing trademark, signifying quality, placed on all of its wares. The electrical contractor organizations in California are seeking to establish a similar trademark, to be used by reputable firms. There is general dissatisfaction with present conditions.

Little can be accomplished by individuals and organizations working alone. It would seem that the various cooperative campaigns and leagues, which have been organized to fulfil just this purpose, should be the medium through which these evils should be corrected. If these organizations are not properly fitted by personnel, finances or inclination to undertake this work, they should be so fitted at once.

A combination of organizations, having the wholehearted backing of the entire electrical industry in the West, should study this problem and devise a solution.

If the establishment of a trademark which will indicate quality of workmanship, quality of material and just and reasonable price, is the answer, then such should be designed. However, any such symbol that does not have the assistance and backing of everyone is doomed to failure.

The Journal of Electricity and Western Industry has no ready-made solution at hand but stands ready to foster and promote some means of combating the conditions that threaten electrical contracting business. The constructive thought of the entire electrical industry is summoned to assist in working out this problem.

The Northwest Electric

Light & Power Association

THE convention of the Northwest Electric Light & Power Association at Boise, Idaho, proved to be the most successful of the fifteen previous gatherings of this nature in the Northwest, and the fact that it was held in a section of the Northwest hitherto overlooked insofar as the holding of an electrical convention is concerned, brought out many new faces. The cordiality of the local community growing out of the moderate size of the city itself resulted in an individual welcome to the visitors that is not found in larger communities.

The outstanding features of the convention were three-fold: The excellent report and discussion of the electric range with its costs of service and installation, the work of the committee on accounting

and the discussions pertaining to public relations. In the matter of the electric range, little detail information has hitherto been available as to actual costs involved in electric range service so that a central station could know for sure whether the electric range load is a profitable one or not. Data presented brought forcefully home the fact that this load is not only profitable but very desirable.

In the discussion as to whether depreciation funds should be held as a public trust, as hinted at by George E. Erb, president of the Idaho Public Utilities Commission, this principle was conceded by all, providing that it is interpreted to mean not that these funds are to be invested in insurance companies and like enterprises, but that those in executive control of the companies are to give strict accounting of their monies in the depreciation funds.

Public relations proved by far the most important topic of the convention. The addresses before several of the local business organizations, the public meeting at the Pinney Theatre and the open meeting on the last day of the convention devoted to a presentation of the California Water and Power Act all proved interesting and exceedingly illuminating. This frank open discussion with business men throughout the West is one very direct way of bringing about a complete sympathetic understanding with the public insofar as the general power situation is concerned.

The convention at Boise will long remain as a red letter occasion in electrical annals of the Northwest and to W. R. Putnam, its able presiding officer, is due from men of the industry in the West a lasting debt of gratitude for his year of untiring effort in their behalf.

The Western Exposition in Portland—1925

WELL wishers of the West are hoping that the State of Oregon will back up the City of Portland at their forthcoming election by appropriating ample funds to finance the great fair that is proposed for Portland in 1925 and for which Portland itself has already lavishly appropriated funds.

There is much that an Exposition of this sort can mean not only for Portland and for Oregon, but for the entire West. The several communities of the West are today so closely tied in the one with the other that the bringing of thousands of inquiring visitors to any section of the West immediately opens up new channels of business for every other section. Washington, California and the Intermountain states should at once endorse this great exposition by being well represented in mining, agricultural and industrial exhibits immediately upon the passage of this proposed Oregon appropriation by the voters of that state.

The wonderful view from Portland heights down upon Portland's industrial center looking toward Swan Island, where in all probability the Exposition will be located, indicates a magnificent opportunity for the future industrial prowess of this great city of the Northwest, and in the visualization one may see the greatness of Seattle, Spokane, Salt Lake City, San Francisco, Los Angeles and other thriving communities of this section of our nation under a harmonious plan of development working for a greater and better West. And an exposition such as that proposed for Portland in 1925 will do much to forward this great accomplishment.

Electric Range Costs Justified

PATIENCE still is needed in the electric range situation. Recent discussion of the western conditions in this field has brought out the fact that neither the original cost of equipment nor the costs now involved in servicing and distribution are wholly satisfactory to those interested in the development of electric cooking.

Manufacturing conditions as reported from one factory of national reputation offer some explanation of the reason for the high initial cost. Labor is still the most important factor. The increase over 1914 labor prices was something like 145%, whereas the decrease from this peak condition to date has been not more than 12% to 15%. This is largely due to the rental and housing situation in industrial centers which is far from satisfactory. Steel is still one hundred per cent higher than 1914 prices. As a result of this situation, it is pointed out that the heating element alone in the electric range costs as much to manufacture as an entire gas range.

We enter the season ahead, however, with more electric ranges on power company lines than ever before in the history of the West. In the lead is the Idaho Power Company, with every fifth residential consumer the possessor of an electric range. There are tremendous possibilities for this modern convenience in the homes of the West, over a million and a quarter of which are already electrically connected. If the density for electric range service which prevails in Idaho were extended throughout the West, enormous new merchandising possibilities for electrical equipment would be opened up and thousands upon thousands of electrical horsepower now available could at once be absorbed.

The electric range is in somewhat the pioneer stage that the electric iron was fifteen years ago. If all branches of the industry will remember this in outlining their demands for profits in its merchandising and exercise a little patience, there is a great future in this field. In spite of a manufacturing situation, a servicing situation and a contention as to distribution costs among jobbers, central stations and contractor-dealers not adjusted as yet by any means, the coming year promises to be for the electric range, the most active and profitable in its history.

Making Use of the College Man

YOUNG Lochinvar has been coming out of western colleges in great numbers during the past few weeks. Pictured as serene in the confidence that the world is to be conquered and with special inside information as to who will command the triumphant onslaught, the young college graduate is mentioned always in a somewhat amused tone of voice. The amusement does no harm—in fact, it is rather good for the initiate into the business world—but it should not go so far as to disregard seriously the possibilities of the college man as business material of great promise.

There is quite a wide spread sentiment among those who rose from the ranks themselves, which seizes upon the fumbings of the college man's first year and which would disparage university training and the university trained man, hailing the successful worker from among them as an exception. This is a misconception of what the college aims to do. It does not pretend to furnish trained workmen; it

has facilities for providing only one side of a business training; its graduates should be looked upon merely as well trained apprentices in the business field.

If this fact is understood and the proper training and opportunity to learn provided for the new recruits in whatever position they enter, much wasted motion will be avoided. Western industry needs many things: it needs money, it needs mechanical improvement, it needs power—but most of all, and if these things are to come, it needs men. Not all the best material goes to college, but most of the material which does go to college is good. The industrial man of the West will come more and more to look to this group as a source from which he may draw the raw material of his personnel.

Electric House Heating a Western Reality

WHILE eastern sections of the country are shaking their heads over the impossibility of using electricity for the heating of houses, except as an auxiliary convenience in sick rooms and the homes of the rich, and while manufacturers, also eastern, have checked this possibility off their list and are willing to acknowledge that they provide no adequate equipment for complete house heating, developments have already passed beyond the experimental stage in the West and electric house-heating is a fact. A recent gathering of electrical men interested in this work brought out the fact that there was more active interest being shown in this field by the public than in almost any other line of electrical activity. The statement was made by one large power company that for every inquiry received in their offices in regard to electric ranges, there were three on the subject of electric house heating.

Electric heating in this sense does not mean heating by socket appliances, but implies complete wiring and the installation of heaters providing from 2000-4000 watts per room. The interesting part of the development has been that it has not required excessively low rates on the part of the power companies. It has been found that if the customer understands exactly what he may expect in the matter of electric bills, he will accept charges considerably higher than his fuel bill would amount to otherwise. Electric heating probably is still somewhat more expensive than other methods, although a scientific use of intermediate and low heats makes this difference insignificant in view of the increased cleanliness and comfort. In spite of costs, private homes and apartment houses alike in California and in the northwest are adopting electric heat and paying their monthly bills with every appearance of satisfaction.

Power companies in the intermountain district have protested in the past against the electric heating load as undesirable. The full details of the present experiment have not been worked out from this standpoint, but at the present time, it appears that such a load, particularly if means can be worked out to bring it on at off peak periods of the day, will

prove most advantageous. The absence of an appreciable irrigation load means a valley of about 15% in the winter time—a depression for which the heating load will do much to compensate. A water heating system which will utilize current during the night, warming the house through this stored heat in the daytime, has been suggested as one means of bringing about the desired end. It is time the manufacturer waked up to his opportunity. The heating load at the present time is a casual one, but it appears certain that the present popular interest will develop it shortly into one of the most important fields served by western power companies.

Depreciation Funds as a Public Trust

GEORGE E. ERB, president of the Idaho Public Utilities Commission, in his recent address before the Northwest Electric Light and Power Association laid down three master principles which should be borne in mind by a utility commission in formulating its policies. He stated that in regulating public utilities a commission should view each problem from the three sides of a triangle:

"First—Is the service the best possible service, at the least possible price, which can be afforded the patron?

"Second—Will the rendering of this service in this manner, and for this price, yield a fair return on the investment, judiciously made, in property used and useful, and reasonably necessary and required in the service of the public?

"And, last: Is the action taken such as will attract capital and encourage further investment in utility enterprises, and thereby aid in the development of the state and exploitation of its dormant resources?"

Mr. Erb in another portion of his address stated that depreciation funds should be held as public trusts. Much depends upon the further interpretation that is to be given to this pronouncement. Mr. Erb had already advocated the encouragement of further investment in utility enterprises as an important factor and further went on record with the statement that a commission's functions are regulatory and not managerial. If the matter be construed in the light of these axioms, the principle involved lays the foundation for further advance in utility regulation throughout the nation.

But if by "funds being held as public trusts" he means the creation of sums of money for recapture of properties, which funds are to be beyond the control of those in executive charge of the utility, the situation becomes one, of course, that presents an entirely different aspect. So long as regulatory bodies use their authority to see to it that reasonable service and fair and just charges are maintained for that service, communities throughout the West will thrive and new life will constantly be attracted. If ever instances should arise in which utilities do not give this reasonable service at fair charges, they should be placed in the hands of a receiver, but under no circumstances should the commission itself enter the managerial realm in the operating of the utilities' properties.

Western Comment on Current Events

Editorial Notes and Readers' Views on the Outstanding Aspects of Financing, Trade Promotion, Legislative and Associated Topics that have a Special Bearing on Western Business

On May 29th a decision was handed down by the Supreme Court to the effect that the common control of the Central Pacific and Southern Pacific Lines,

Dissolution of Central and Southern Pacific

which originated more than half a century ago, was in violation of the Sherman Anti-Trust law of 1890, and the companies were ordered to dissolve. So interwoven are all of the facilities of the railroads as regards ownership of tracks, shops, terminals and franchise rights, that it is not believed practicable to separate them, and, since no separation can be made without great injury to the public service the order of the court is causing widespread concern throughout the West.

vides that consolidations so approved and authorized shall be relieved from the operation of the Sherman Act and other anti-trust laws.

Economic conditions are quite beyond the control of legislative enactments, and many of the provisions of the Sherman Anti-Trust act and its supplement the Clayton act are sadly out of harmony with the present conditions of the country. It is to the public interest that there be consolidations of the existing transportation systems under strict regulation of the Interstate Commerce Commission. And public interest dictates that there be no dissolution.

An ordinance was recently introduced in the city council at Seattle to offer to Henry Ford a lease to develop a portion of the Skagit river project. The ordinance stated in effect that

When in Doubt—Let Henry Do It

since Mr. Ford was negotiating with the federal government for the Muscle Shoals project for the development of nitrate and

other products, and as Seattle is in possession of development rights on the Skagit river of larger potential development, that the city proceed to negotiate with Mr. Ford for the purpose of securing his assistance and interest. Since Seattle has nothing to lease except a perpetual permit issued to the city as a municipal corporation by the United States Government, and a lease to any private individual would entail a tax per horsepower of energy produced, it is unlikely that any offer will be tendered Mr. Ford, or accepted by him if tendered.

Agricultural credit throughout the western states will be immeasurably strengthened by the formation of four new Joint Stock Land Banks at Portland,

New Banks Will Stabilize Rural Credits

Salt Lake City, San Francisco and Los Angeles. The Joint Stock Land Banks, which are an adjunct to the Federal Land Banks, were provided for in the Federal

Farm Loan Act of July, 1916. The recent depression with its consequent demoralization of agricultural credit demonstrated the urgent need for some method of financing which would permit the farmer to borrow money at reasonable rates of interest over a long term of years.

Nine banks with resources of six hundred million dollars are cooperating in the formation of these banks in the West, and will make sixteen and one-half millions of dollars available at once to farmers who can meet the requirements of the Federal Farm



Dissolution of the Southern Pacific and Central Pacific lines would give the former company a number of isolated roads, notably in the vicinity of Portland. It would also take away one main route to the East.

It is inconceivable that this order of dissolution should be carried out in the face of the fact that the Interstate Commerce Commission under the Transportation Act of 1920 is now engaged in regrouping the railroads of the country into a limited number of enlarged systems. Pending the adoption of a complete plan of consolidation by the Interstate Commerce Commission, the railroads themselves, it is provided, may consolidate their properties if such consolidation is approved by the Interstate Commerce Commission and is in harmony with the Commission's own plan. The law pro-

Loan Act. The farmer will deal directly with the bank, and will be permitted to borrow up to forty thousand dollars. Fifty per cent of the value of the land will be the maximum amount of a loan. The value will be determined by government appraisers and will be based upon actual productive value.

The trend of agricultural conditions has been such in the past few years that there has developed an urgent need for long term loans which can be paid back, out of the earnings of the land which they are used to develop. The successful agriculturist of today must be a business man. The land banks will not solve all of his problems, but they will greatly assist him, and incidentally, by insuring the farmer's prosperity share in the resulting general prosperity which will result.

The lumber industry in the Pacific Northwest was one of the industries which suffered most keenly in the recent business depression and was one of the

Wage Increases in Puget Sound Lumber Mills

first to adjust wage scales to production. With increasing activity in lumbering, numerous lumber mills in the Puget Sound territory have granted wage increases approximating ten per cent in all lines of employment. The increase was announced following a meeting of the "Four L Board" composed of four employers and four employes, who are members of the Loyal Legion of Loggers and Lumbermen. In Tacoma 2,000 mill employes were benefited by an increase of five cents per hour, which makes the minimum wage for common labor in "Four L" mills, \$3.40 per day.

In Everett, Washington, lumber manufacturers announced a flat increase of fifty cents per day, making the minimum wage for common labor \$3.50, which approximates going wages in Seattle, where a ten per cent increase was announced.

This decision on the part of the lumber manufacturers of the Puget Sound region would seem to substantiate the current reports from different trades and sections of the West which give rise to confident expectations and supports the more general belief that recovery from depression has generally developed.

That there seems to be much popular misapprehension and conflicting opinion regarding the present condition of our foreign trade, is the opinion of

Figures Show Foreign Trade Above Normal

Secretary Hoover, who recently called attention to a few fundamental factors in the situation. Mr. Hoover quoted figures, a summary of which is shown in the accompanying table, which ratios indicate that the trade of the United States is nearer normal than the trade of the United Kingdom, France, or Germany, our nearest competitors. While the figures shown in the table are only approximately comparable, owing to the fluctuations in price level, it is believed that they are sufficiently correct to indicate the relative advantage of the United States in foreign trade.

Mr. Hoover commented further to the effect that during the past few months there has been a distinct revival in trade from the low point, and that he is confident that we have little reason to accept the pessimistic view of our foreign trade future taken by many students of the question. Our trade has shifted somewhat as to commodities owing to the changed economic currents, due to the war, but when all is said and done the remarkable fact stands out that we have held on.

Foreign Trade of the United States, United Kingdom, France, and Germany, Before and After the War

Countries	—Ratio of 1921 to 1913—		
	Imports	Exports	Total Trade
United States	133	191	164
United Kingdom	112	101	107
France	108	121	114
Germany	41	36	39

Forest fires which were remarkable both for the amount of damage which was done and for the early date in the season which they occurred, swept over the Puget Sound district during the first week of June. Before the fires could be brought under control, damage to the extent of three million dollars was done.

Early Forest Fire Sweeps NorthWest

An entire town, lumber mills, logging camps and railroad properties were among property destroyed. In the Cedar Falls district, near Seattle, the loss is placed at approximately \$600,000, this including damages of \$90,000 to the Chicago-Milwaukee R.R. properties; also damages to water and light prop-



Early fires which raged through the forest regions of the Puget Sound district took heavy toll. The Chicago, Milwaukee and St. Paul railroad lost many cars like the one above which was loaded with lumber.

erties of the city of Seattle estimated at \$25,000, besides loss of timber for which no estimate is available. The Green River Lumber Company lost a sawmill and camp buildings valued at \$150,000 and for several days, the city of Seattle's municipal hydroelectric plant at Cedar Falls was in grave danger, and fire-fighters from Seattle were sent to help fight the flames. The entire town of Cedar Falls was destroyed, and hundreds left homeless. Losses to logging concerns and sawmill operators in the district totaled more than \$500,000, besides the huge areas of timber burned.

Letters to the Editor

Customers Reaping Rich Harvest From Cut-rate Electrical Work in British Columbia

To the Editor:

Sir: The consumer who is so often depicted by the cartoonist as being crushed under the heel of the wholesaler or some other middleman is reaping a rich harvest out of the electrical contractor and out of some other contractors these days, at any rate in some parts of the continent.

Whatever it may be elsewhere on the continent, there is "something rotten in the state of Denmark" about the moral factor in the business circles of my part of the country. Were it not that other places may be suffering in silence from the same type of disease and that remedial measures are already being taken, I might hesitate to lay bare the facts.

At the present time, the consumer is in many cases getting his electrical work and much other work done at less than cost, through a suicidal policy of underbidding and through a lack of knowledge of the cost of doing work, which lack of knowledge on the part of contractors is gradually being removed. The electrical contractor, however, thinks he is making money, the jobber thinks he is selling goods, but the only man who is ahead of the game is the consumer.

To give a concrete instance or two: the wiring contract for a group of nine small stores was recently let for about \$400 whereas it was ascertained later that the material alone for the job would cost more than that. One jobbing firm refused to sell the goods because they could not be sure of getting their money out of the job. In other cases, there will be a difference of \$400 or \$500 on a \$1,600 contract.

Reports indicate that the electrical business is not the only one which is suffering. A contract for sewer work was let recently in Vancouver in which the lowest bid was \$28,000 and the highest \$62,000. The lowest bid got the job. Printers are finding a similar state of affairs. The cost of one job without profit was \$52, yet a printer bid \$39 for the job. Painters report that few house jobs are being done by legitimate painters.

All this is meat for the building contractor and the home owner. Unfortunately the former is not any more moral than he should be. He jockeys for bids, playing one against the other. Knowing the state of affairs in the electrical industry, he will obtain a bid from a legitimate electrical contractor, then go to a curbstoner to beat him down. After trading this information around a bit, with the desperate curbstoner getting lower and lower, the contractor finally gets a figure which he thinks represents the absolute minimum and the job is let.

Recently in Vancouver a shrewd contractor was asked to bid on a job but knowing that his tender would be used to beat down a curbstoner, he submitted a lump sum bid in an open letter. He also sent in a sealed tender several hundred dollars higher. Sure enough, the job was let to another party at less than this contractor's open bid.

In another case, two legitimate contractors went carefully over a house and arrived at a figure of \$170 for the wiring. When the general contractor was approached, he said they would have to come down to \$70 on the job as he knew he could get the work done for that.

The way the curbstoner functions warrants some criticism and some sympathy. He deludes himself that he has no overhead; he figures bare material and labor and then

wonders why he has no money and no credit. Thinking that the remedy is still more furious price cutting, he takes that course more or less blindly until inevitably he goes bankrupt and if the jobber has been foolish enough to give him credit, the jobber pays for the jobs the customers have been getting at less than cost.

No sooner does one curbstoner go out of business than another springs up and the process begins over again.

Another feature of the curbstoner is his ability to work from daylight to dusk, irrespective of union rules, although he still carries his card. He can be seen working on jobs by candle-light and even on Sundays if he can get away with it. Then he says that if he is to go out of business the legitimate contractor must employ him. However, the moment that he gets on the payroll of the legitimate contractor, does he get to work early and stay late and hustle every minute? He does—not. He becomes a regular union man then.

Another thorn in the flesh of the legitimate man is the employe who works after hours on private jobs, competing with his boss and very often using his employer's materials, surreptitiously spirited away or saved out of jobs he had been working on.

Under this price-cutting game, it is to be presumed that it cannot go on forever; yet the curbstoner can struggle along not making day's wages out of it, for a long time. Perhaps he does not realize that his kit of tools is not as good; that he has not replaced this or that tool he had at the beginning of the year; perhaps his runabout has depreciated without his accounting for it; and perhaps he owes a big account for material at several jobbing houses, which accounts he expects to pay out of the profits from a big job he has on hand. But now we find curbstoners who pay cash for their materials and require credit which jobbers might refuse them.

The remedies are several. They can be directed to the curbstoner, the legitimate contractor and the public.

The curbstoner knows that something is wrong but he does not know what it is. The remedy with him is education along cost lines. But there is something more than that. He should be educated to know that his salvation lies in concerted action. He has been used to playing a lone game and he fights shy of anything that smacks of a combine. For that reason it is essential that service leagues and even contractor-dealer organizations should not be exclusive. If they are, some curbstoner will make capital of it and advertise that he is "not in the combine." Every curbstoner is jealous of the legitimate contractor and generally is jealous of the other man. Time may make him desperate and drive him to lose his liberty in favor of protection against the price-cutting game.

All the education is not needed solely among the curbstoners. A recent case came to notice in which a contracting firm having a set of offices downtown paid out in labor on a job three times the amount they had put in their estimate.

If the curbstoner needs education, it should not be thought that everything is lovely with the legitimate contractor. It is fatal if he assumes that everything is wrong with the other fellow and makes no effort to criticize himself. There is no doubt that the curbstoner does far more hustling around after business than his legitimate competitor. There are cases on record where the latter filed away requests for tenders and either forgot about them or sent them a week or so after.

Lastly, what can we do with the public? Can the public be educated to realize that quality electrical work is cheapest just as a large part of it now believes that quality shoes or suits are cheapest? I believe it can. Some of that work is now going on. The public is being educated to insist on more convenience outlets and not to be swayed by the lower

bid of the electrical man who suggests cutting out these "unnecessary" things.

To further this work, the Electrical Service League of British Columbia has issued a pamphlet for public distribution on "The Cost of the Lowest Bid." The material contained in this leaflet is largely culled from the excellent advertisements of the Pacific States Electric Company.

At the same time, the field man of the league is educating electrical contractors on cost accounting, getting the curbstoners together to form an organization of their own and promoting the electrical convenience idea in the mind of the public.

The curbstoners are becoming alive to the situation but they find as soon as they attempt to play the game that there are other men who are parasites upon them. It was found recently in Vancouver that there were men charging only \$1.65 per outlet complete, which was about half the curbstoners themselves figured they could do work for.

There is no one remedy for the situation. Several different attacks must be made. Something can be done from the point of view of the jobber in recognizing only those contractors who charge proper prices. In this way, the bad accounts will be heaped upon any jobber who does not fall in line. At the same time, the contractors should patronize only those jobbers who play the game. The fire underwriters, the provincial or state inspectors or the civic, municipal or county inspectors are other levers which may be used in particular cases.

JAMES LIGHTBODY,

Honorary Secretary, B. C. Electric Service League,
and Publicity Manager, B. C. Electric Ry. Co., Ltd.
Vancouver, B. C.

"Eliminating the Waste In Industry" Meets with Gratifying Response from Utah Reader

To the Editor:

Sir: Mr. Leurey's article in the June 1st issue of the Journal of Electricity and Western Industry has been noted with much interest, particularly that part referring to the savings effected by the Union Sugar Company at Betteravia, California, for the reason that this is a case similar to a number of situations in our own territory where we are supplying electric service to sugar factories, which, during the sugar making period, generate a large portion of their own power and the balance of the year purchase power from this company.

We are also very much interested in the cut showing proper illumination necessary for efficiency, which was taken at the packing room of the Sperry Company mill at Ogden, Utah.

I wish to congratulate you upon the clear and concise manner in which these articles have been written, and will look forward to future issues along this same line.

P. M. PARRY,

Commercial Mgr., Utah Power and Light Co.
Salt Lake City.

It Is No Saving to Reduce Expenses by Cutting Down Insurance Protection

To the Editor:

Sir: "It is better to have it and never need it, than to need it and not have it." The origin of this saying may be lost in obscurity, but as applied to insurance, it is full of good logic and sound suggestion.

It is a commendable practice to maintain overhead costs as low as is consistent with efficiency of operation and maximum production. It is not an indication of good judgment, however, to endeavor to operate any business at so low an overhead as to jeopardize the financial stability of the enter-

prise, nor is it wise to fail to safeguard a business venture by every legitimate means of protection. To make practical application of the above suggestions, witness the payment of some four hundred and ninety thousand dollars odd issued to the Los Alamitos Sugar Company to cover a recent fire loss, the destruction of the Forsyth Block in Fresno, which meant a loss of \$224,000, or the Ambassador Hotel, Santa Barbara, approximately \$360,000. All are eloquent arguments in favor of protection, and, at the same time, a practical illustration of the possibilities of disaster in case of inadequate protection.

There are many enterprises in our western territory which are subject to losses as severe as these, and yet, on the other hand, few of them could sustain such losses with a lack of protection or inadequate protection without serious jeopardy to their financial stability.

No doubt the problem of proper fire insurance protection is fairly well understood and appreciated by the average business firm, yet the principle involved is of far-reaching importance and will bear recital.

There is another phase of insurance protection which occurs much less frequently but is of less importance. We refer to the one-man or two-men ventures where the elimination of the principal or principals by death or disability would seriously handicap or even completely destroy the enterprise. Often a new enterprise depends to a very great degree upon the genius of a single man to finance such an institution, and leaving it unprotected by failure to properly insure the principal is comparable to taking your after-dinner smoke sitting on a can of powder. Perhaps you will not drop a spark, yet the wise man, if he smokes, smokes elsewhere. Likewise in the case of the business referred to, adequate life insurance upon the principal would in a great measure eliminate the possibilities of loss from his death or disability.

Not long since, our attention was called to the total loss at sea on a vessel on which there was no marine insurance. It does not seem reasonable that any person, firm or corporation with sufficient enterprise to acquire the ownership of a vessel would take that unnecessary chance, but since such has been the case in the past, we have thought it of sufficient importance to direct attention to this most important branch of our business life and point out briefly, and by a few outstanding examples, the value to enterprises of adequate insurance protection.

It is a peculiar quality of the average mind, and perhaps rightly so, that the thought of success and accomplishment often so far out-shadows the possibilities of disaster or failure that it requires a striking example of the possibilities of shock losses and disasters which are before all of us personally and collectively to "make us sit up and take notice."

W. H. CHOWEN,
San Francisco. Insurance Rating Bureau.

RADIO BULLETINS

The Journal of Electricity and Western Industry broadcasts a special industrial and business news report each Monday night at 7:30 o'clock, both from San Francisco and Portland. The San Francisco report is broadcasted from station 6XAC, operated by the Colin B. Kennedy Company at Los Altos, California. The Portland report is sent out by the Northwestern Radio Manufacturing Company from station 7XF. Both reports are broadcasted on a wave length of 360 meters.

Builders of the West

IT is difficult to write of the past achievements of a man who lives so wholly in the future. For Francis Marion Smith, widely known as "Borax" Smith, is still a builder at seventy-six, and must by the inevitable strain in his nature remain so throughout his life. Caught in the urge of the western spirit, he left his Wisconsin farm home at the age of twenty-one and, yielding to the instinct which was afterwards to make him famous and give to the world one of its most useful compounds, he followed mining camps from Montana to Idaho, from Nevada to California. During this time he turned his hand to nearly every vocation pertaining to mining.

Great discoveries come at unexpected moments. Smith, engaged as a contractor cutting timber for the Columbus mines in Nevada in 1872, discovered Teels' Marsh to be rich in borax. He recognized its value. He swept aside difficulties and delays. He finally succeeded in securing enough locations practically to control the borax market for a long period of years.

It would take a volume—and a fascinating one—to tell of the years which followed, during which Francis Smith extended his operations in borax to Death Valley, California. Borax became an important article of commerce and a household article of general use, and the millions flowed like water into his hands.

Wide are the ramifying influences of such a discovery and its results. When William T. Coleman, who was associated with Mr. Smith in the Death Valley enterprise, and the latter found the vast deposits of borate ore in this field, they realized that the beautiful, shining blocks were nameless, and added "colmanite" as a new word to the dictionary.

In those early days "Borax" Smith's ingenuity was taxed to the limit in the execution of his designs. He created the twenty mule team to haul borax from Death Valley to Mohave, one hundred and sixty-four miles. This innovation in the desert was a still greater spectacle on Broadway, New York, where Mr. Smith sent the string of animals and their sombreroed driver whirling his long whip,



FRANCIS MARION SMITH

Pioneer miner, discoverer, financier and builder, who has helped to improve the East Bay cities and has given to the world the great staple, borax.

as a picturesque advertisement of his discovery.

But the greatest influence of the millions made in borax has been felt in the East Bay Cities of California. With the vision of the builder which characterized him, Mr. Smith saw the transformation which would be effected in this region by the proper public utility development. He bought all the street car lines in Alameda and Contra Costa counties, including the cities of Oakland, Alameda, Berkeley, Emeryville, Albany, Richmond and Hayward. He merged them into one great traction system, later extending this to ferry lines to San Francisco, known as the Key Route. Not content with this, Mr. Smith bought and opened up vast tracts of land for residential and industrial use. His keen eyes saw the hill slopes of the East Bay cities covered with homes. They did not rise, however, so easily as did

Ilion's walls to the music of Apollo's lyre. The vast sums expended in these colossal enterprises brought insufficient returns. And in 1912 Francis Smith faced the world a ruined man.

But failure could not claim this builder. Today he is the president of the West End Chemical Company, operating successfully near Las Vegas, Nevada. Today his company whose engineers are surveying for a railroad from Dike to the borax holdings, is negotiating with the United States Government to extend that line to Boulder Dam. Thus supplies can be conveyed by the same medium to the borax fields and to the Federal property.

And this is but one more step in his career. "Borax" Smith sits at his desk again, planning and constructing. Out of his dreams which he shruggingly discredits may come some vast new project for the upbuilding of the West.

To Francis Marion Smith, then, because of his discoverer's instinct which gave to the world one of its most valuable articles of household use, and because of his realized ambition to improve immeasurably the cities of the East Bay region, this issue of the Journal of Electricity and Western Industry is affectionately dedicated.



The San Francisco Lighthouse offers an example of a situation in which steel is subjected to particular hazards of corrosion, owing not only to the abrasive effects of the waves, but the alternate wetting and drying in the presence of sea water. Without the protection of the surface, the metal would long since have rotted away.



Another situation in which the protective measures to prevent corrosion will save thousands of dollars—the tower of the Merced waterworks, the largest structure of its kind in California. Protection is required both inside and outside, on account of the varying level of the water. The cost of paint is small compared to what is saved through longer life.

Fighting Corrosion as a Major Source of Waste in Industry

Preventing the Destructive Effects of Corrosion by the Judicious Use of Paint on Metal Surfaces Means Doing Away with Present Danger Points and the Saving of Thousands of Dollars to Western Industrial Plants

By R. H. HUBBELL,
Hill, Hubbell and Co.

AT Delhi, India, there stands the famous Iron Column of Kutab Minar. Erected about 900 B. C., it stands today untouched by corrosion though without protective coating of any kind. This ancient column is of pure hand wrought iron, a material not produced in quantity in this present age of steel.

Until such time as metallurgists shall have succeeded in producing in quantity and at moderate cost a metal possessing the non-corroding properties of the famous Iron Column, the question of adequate surface protection of present day steel structures is a very acute one.

Danger and Waste Through Corrosion

Corrosion is undoubtedly one of the greatest single factors contributing to waste in industry, and the following abstract from a paper read before the Institution of Civil Engineers, London, April 4, 1922, by Sir Robert Abbot Hadfield, Bart. F.R.S., will be of interest:

"The author calls attention to the wastage of the world's iron and steel from corrosion, the full extent of its ravages being only realized when an attempt is made to estimate them.

"The world's output of iron and steel during 1860-1920 is estimated at 1,860,000,000 tons of which 660,000,000 tons may be considered lost by rusting in use. For the year 1920 the loss by rusting in use is estimated at 29,000,000 tons, and for that year with steel at £20 per ton, and after making allowances for protection, etc., the annual cost of wastage was probably over 700,000,000 pounds sterling.

"It is hoped that the paper will arouse more attention to the subject and create greater interest in the production of alloy steels having the capacity of resisting corrosion."

Someone has said that steel is a dangerous as well as a useful metal. It is indeed dangerous if not properly cared for. Take for instance the Brooklyn Bridge; rust surely spells danger here. Two hundred forty-eight thousand persons daily pass over this network of steel; probably no other steel structure is more closely watched for signs of corrosion. A force of workmen is constantly engaged seeking out and coating the rusty places. Approximately 2,000 gallons of paint are applied to this bridge annually.

Volumes have been written concerning the causes of corrosion of iron and steel, and the electrolytic theory is now the commonly accepted one. All authorities are agreed that aside from direct attacks made upon the metal by acids, alkalis, etc., no corrosion can possibly occur without the presence of moisture and oxygen.

It is obvious that corrosion or rusting can only begin on the surface of the metal and that if the surface can be protected at all times by a water-proof coating, there can be no corrosion.

"Save the Surface and You Save All"—these seven words tell the whole story. They have been adopted as the Slogan of the Save the Surface Campaign.

This campaign is a great movement, national in scope, which is being conducted all over this country, under the auspices of the Paint, Varnish and Allied Industries. The movement is an effort on the part of the association to educate the public generally as to the importance of surface protection.

Such a movement is sure to result in the saving of enormous sums to industry aside from the fact that it must contribute no little to the cleanliness and general appearance of our communities.

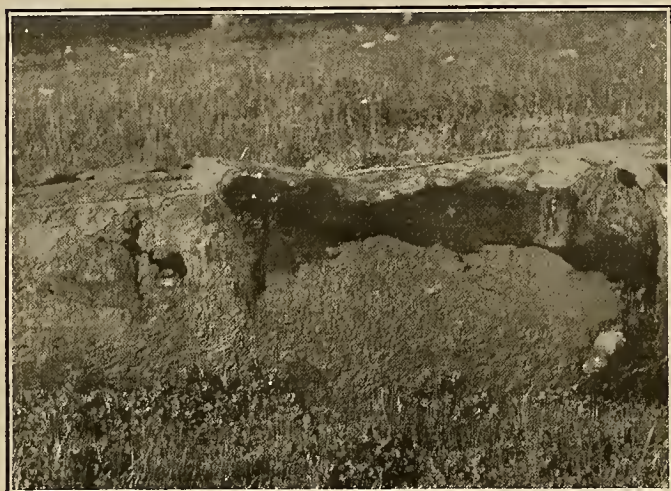
The preservation of wood surfaces involves no other principle. "Save the Surface" applies to all materials used in construction. Well seasoned wood

equipment, paints that are specially formulated to combat conditions peculiar to that industry.

Make Use of the Manufacturer

It seems to the writer that the selection of paints is too often left to some one totally without knowledge of what is required, the manufacturer or dealer not knowing the purpose for which the paint or varnish is intended and often not caring, gladly ships the material as ordered and his responsibility ends right there.

This point is well illustrated by stating that there are certain paints which are intended for and



It is estimated that 29,000,000 tons of iron and steel products are lost through corrosion every year. Steel water pipe, influenced both by the action of the water and of the earth, offers a particular susceptibility to rust. A protective coating would have saved this pipe.



Four hundred and thirty miles of water pipe laid through alkali soil are expected to withstand the depredations of corrosion for an indefinite period. Rust can start only at the surface and the surface is protected by a permanent coating here shown as it is being applied in position.

will last indefinitely if kept well painted. A paint coating seals the pores of wood or concrete and prevents the entrance of organisms which produce decay.

There are several ways of obtaining surface protection:

- 1—Enameling—i. e., covering with a vitreous coating baked at high temperatures.
- 2—Coating with other metals not liable to corrosion, such as lead, zinc, tin and copper, either by electro plating, galvanizing or sherardizing. The above methods are usually confined to comparatively small articles owing to high cost and difficulty of application to large structures.
- 3—Coating with inhibitive protective paints.

Choice of Proper Coating

The main thing to be considered is the selection of the proper coating. All things perish and a paint or varnish coating, even of the best, is by no means an exception. It must gradually succumb in time to the action of rain, sun, wind, acid laden atmosphere, etc. Buyers of paint are often prone to expect more of a paint coating than it can possibly fulfill; however, much can be accomplished by an intelligent selection of the paint to be used.

Formulae have been developed for protective coatings which will fulfill each of the purposes for which protective coatings are used, and nearly every industry requires in certain places or on certain

are useful for second coat work only, as they contain pigments which, when applied to the bare metal, are actual stimulators of corrosion. It goes without saying that such paints applied as primers are bound to do more harm than good.

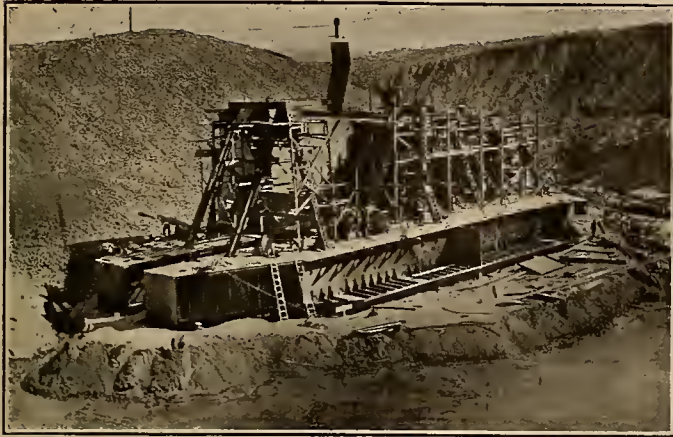
This is the day of the chemist, the specialist. The corrosion problem, as it applies to various industries, is pretty well understood by the chemist familiar with the technology of paint vehicles and pigments; and new formulae are being developed constantly by such investigators as Gardner, Cushman, Sabin and many others.

There is no doubt that a very considerable saving to industry in time, money and property could be effected if owners and managers of industrial operations would shift the burden of their corrosion problem upon their paint manufacturer. He understands what is needed and is equipped to take care of it.

Paints That Injure the Metal

We need not go very far back to the day when most buyers of protective paints looked askance at ready mixed or prepared paints and it was commonly believed that best results were to be obtained by buying the ingredients and mixing them on the job. This is far from the truth and a property owner today purchasing paints made by a reliable manu-

facturer can be assured of getting ready mixed paints prepared for the specific purpose for which they are intended, manufactured to exact formulæ and under strict laboratory control.



Much of the corrosive effect on iron and steel surfaces is credited to electrolysis. The conditions under which a dredge is operated offer an ideal situation for maximum corrosion. Metal surfaces within and without are therefore carefully protected from exposure either to the air or to moisture.

Real economy in the painting of iron and steel especially, is only effected by the use of the highest grades of paint, each a specific product for a specific purpose, as a great many cheap paints contain pigments which promote corrosion. Repainting should be done as soon as signs of corrosion become evident, for, if corrosion is allowed to go unchecked, it soon reaches a point where the cost of scaling, scraping



Drinking water and pressure tanks are part of the standard equipment of every large building. Every owner should be on the watchout for the inroads of corrosion in danger spots such as this. The tanks here shown on the roof of a San Francisco office building are coated within and without.

or cleaning of rusty surfaces for repainting will exceed the cost of paint and application combined.

One Way to Waste Money

There is another phase of the protection problem which is of equal importance with the selection of paints; this is the preparation of the surfaces to be coated. A whole volume could be written on this, but after all, it comes down to mostly a matter of

common sense and may safely be left in the hands of an experienced painter, but how many of us have seen Bill or Joe or some handy man about the place who didn't happen to have anything else to do at the time merrily daubing good expensive paint over wet, greasy or rusty surfaces. Pure waste of time, money and effort, even worse than no coating at all, as a paint film applied over such surfaces is sure to crack in some places and adhere in others, making countless tiny pockets for the collection of moisture, each pocket a complete galvanic battery in itself, causing immediate pitting, the most malignant type of corrosion of all.

It is not always expedient to have the painting done by journeymen painters but it is possible for someone to see to it that the workmen applying



Massive as these gates are, which operate the locks at Lake Washington, Seattle, they would last but a few years if the bare metal were exposed to the alternate wet and dry conditions to which they are submitted. The careful upkeep of their coating of paint is one of the recognized operating charges.

paints are at least instructed in a few of the first principles.

Paint as a Business Asset

Mr. Gardner states in his Papers on Paint and Varnish:

"An inquiry made a few years ago in the Middle West as to the value of paint upon farm buildings developed the information that bankers would lend from 5 to 50 per cent more on land where farm buildings were well painted and kept in good condition than on land where they were not. It was maintained that the painted buildings were an indication of thrift, and that a thrifty farmer was a good client to whom money could be safely loaned. . . . It developed that in practically every instance where the buildings had been repaired when necessary and given proper paint protection, the valuation of the farm immediately increased at least 20% whereas the cost of making repairs and painting in many instances was not over 5 to 8 per cent."

This same principle must apply to industry. Competition is keener right now than ever before. There is no place at this time for waste in industry. Corrosion and decay mean waste. Nothing will pay property owners a higher return than an intelligent investment in protective paints.

What Are Your Methods in Hiring Men for Business?

The Classes of Men to Be Avoided and Traits Most Desirable in an Employee are Discussed From the Angle of the Employer by a Man who Handles the Placement of Many Men as Director of Employment Service with the Y. M. C. A.

By GEO. H. DeKAY, JR.,
San Francisco

IN bygone days of close and intimate contacts between employer and employe, the question of securing a new man when needed did not present a very serious problem. Either a foreman had some friend or relation to favor, or one of the men could name a candidate, or the employer would have in view some one from his circle of business and social acquaintances to meet the situation. Such close contacts resulted in securing men who were well known and who would take real pride in their connections.

With the rapid growth of business during the past two decades the employer and employe have been more and more forced apart; the old personal contacts have given place to modern efficiency and ideas of departmentalization. There are no longer the former opportunities to meet and study available men through social and fraternal activities and employes must be secured through more impersonal channels.

The large corporations and business houses of our country are not confronted with the same problems in securing employes that perplex smaller organizations. In the larger industries and associations, employment is centralized under the supervision of men trained in selecting personnel; men who are keen students of human nature, well posted on the needs and requirements of all departments, more or less psychoanalysts, and who are familiar with the sources upon which to draw for new material. It is the business of these men to know what qualities to avoid as well as those to look for in a man and how to bring them to the forefront.

The smaller business man who handles his own hiring is only too often unskilled in this vital and necessary angle of his business. If he has grown old in service and canny through repeated experiences in dealing with his fellow men he can be reasonably relied upon to pick the genuine from the worthless. But such knowledge is too often gained only from bitter and costly experiences. The man who has not yet given years of service to his occupation, who is building up an organization with high hopes for the future knows, or should know, his requirements for employes. But he is often at a loss how to express

these requirements or how to question an applicant in the manner necessary to draw forth the needed information. Through this lack of experience a good man may be lost while an inferior with a smooth tongue is chosen.

No Infallible System

Volumes have been printed on the subject of employing men; rules have been laid down that would presume to make this simply a mathematical problem, but in the end it all centers upon the human equation which is never a fixed or constant quantity.

No man can be infallible in judging human

nature nor can any set of rules be formulated for this, excepting as guide posts showing mostly where not to go rather than giving positive directions. But certain outstanding features and characteristics are so plain and obvious that they are valuable aids in avoiding difficulties at the start.

The natural aim of every employer is to secure the man who can be depended upon to follow instructions and give full value in his services; the

man who can rise to the occasion and is dependable under all circumstances. In attempting to secure this type with the hope of building up a well balanced, permanent organization and with the purpose of avoiding excessive labor turnover, it is well to keep in mind certain occupational classes that have proven notoriously unstable.

These classes will vary somewhat in different sections of the country; those at variance with the fixed types are well enough recognized in their particular localities to give no trouble to employers. In the main, however, the careful employer should hesitate before hiring former bell boys, waiters, porters and others of a kindred nature who expect to receive tips and gratuities for their services. Although their pay envelopes with their new employers may contain a larger sum than they have been receiving they are too often dissatisfied with regular wages. Unfortunately they very quickly think they are mistreated unless they receive the tangible expressions of a tip for their services.

A good example of the above is that of a certain young man who, through his appearance, received



Typical vocational employment office where thousands of men are examined for their fitness for positions in business and industry by trained placement managers.

the favorable attention of an executive and by this man's influence was taken from his work as a bell-boy and given a job as janitor at a better wage than he had been receiving at any time before and with chances to go ahead for something higher. Within a few months he became restless and dissatisfied and announced his intention of leaving, as no one seemed to appreciate his efforts and he hadn't received a dollar in tips from anybody.

Furthermore, as a class, these men easily become discontented with regular employment and are prone to quit at any moment, knowing that they can always pick up a living in the former occupations with little real exertion or initiative being required.

The Disadvantages of an Ex-chauffeur

A second class to avoid will include such men accustomed to irregular hours and locations as railroad brakemen, taxi-drivers, private chauffeurs and others whose work entails no direct responsibility for output from their labor. These men do not take kindly to fixed hours or places of employment, acceptance of detailed instructions or acknowledgment of close authority. They are accustomed to periods of comparative idleness during the day while waiting for calls, between stations on trains or at other intervals. They look for employment giving them constant change and variety, that will not subject them to close working conditions, and cannot be depended upon to remain long with monotonous or regular indoor work.

A smaller group, but a source of trouble, are those who receive remittances or pensions that are not quite large enough to free them from the necessity of employment but who do not have to exert themselves in any line. The reasons that cause them to be in the remittance class will also cause them to be unsatisfactory employees with little or no initiative.

The Migrating Employee

The largest class embraces the newcomer from the four corners of the earth who is simply seeing the country, in spite of protestations that he intends to remain and become the oldest inhabitant. He has no trade and is willing to "do anything" except hard work. Generally his continuity of employment is vague if he can give any; he has worked in too many places to be able to remember them. His references are missing or not available, his abode some transient hotel or cheap rooming house and his idea of employment simply to secure sufficient "stake money" to continue his wanderings. The younger he is the more irresponsible and undesirable from the employer's viewpoint. Should the employer feel inclined, through his sympathies, to give the man a chance, it is well to mention first a buck saw and wood pile or show him some menial task. The majority will weaken and pass on, saving both time and money.

Look Up His Past Record

What, then, are some of the traits the employer should look for and demand in securing a desirable employee?

In determining these features, aside from test-

ing actual experience along the lines needed, the interviewer should obtain the applicant's employment history for several years previous with reasons for leaving each position and explanations covering periods of unemployment. The man who has held too many jobs in a few years, who has had to leave too often because he was always misunderstood, never given a fair chance or imposed upon is a chronic job hunter and well to leave alone.

References are of vital importance if they really go into facts and are from responsible parties. A note simply saying "Frank Wells worked for me and left of his own accord," is of little value and means nothing. Many employers, unfortunately, will discharge a man for shiftlessness or neglect of duty and then give him an open letter of recommendation in order to help him secure another job. The reference that really carries weight goes into details and dates, is on a regular firm letterhead and often bears the counter signature of the employe as a means of identification. References from friends, relations, chance acquaintances, school teachers, clergymen and physicians are of more value as character references than anything else.

Although it is not always necessary or advisable to subject the prospective employe to a series of trade tests or examinations, he should be able to answer a few elementary questions showing his general educational training and ability to handle such simple problems as arise in daily business procedure.

The Assets of Health and Happiness

Since the advent of workmen's compensation acts and with the growth of group industrial insurance, more attention is being paid to health and physical conditions. Many corporations carry the physical question so far that they will not hire a man for a dishwasher without first having him pass the doctor's examination. The business man with a limited capital should protect himself even more carefully against hiring a man with a dormant disease or affliction that might become active as a result of his occupation and give rise to action for compensation or damages.

Two other subjects that have a direct influence on the employe's capacity for turning out the best possible work are finances and domestic conditions. A man who is heavily involved in debt or living under inharmonious home conditions is a man with his mind divided; he cannot give his best efforts under these conditions. Such a man should not necessarily be turned away or discharged solely for these causes unless the employer has found that they cannot be remedied or overcome. Sometimes a quiet talk with the man or wife or some helpful suggestions in home financing will straighten out the tangle and leave a better and more efficient worker.

Tests for Manners

Many smaller features that go to make or mar the ideal employe are shown by him in unconscious manners. Some officials make it a practice to have their desks so placed that the applicant must cross quite an open space before reaching them, during

which time the man is being sized up for erectness, alertness of manner, walk and general bearing. During this necessarily brief but thorough overlooking, points of dress and neatness are noted; cleanliness and neatness of apparel will make a better impression than expensive materials alone.

A man should be expected to be polite and courteous no matter what his station is in the industrial world. Some employers test this in little ways that do not put the man on his guard. A pencil or book is dropped or a window shade so left that the employer can show annoyance from some light beam; the man with inbred courtesy will instinctively pick up the dropped article or remedy the cause of annoyance. There are also many other details such as clean linen, finger nails, shaving, haircuts and shoe shines that are guide posts to the man who can read them.

Take Time to the Choice

The many points mentioned and many more that will suggest themselves do not always come out in one interview. A man courts a maid for months before a mutual decision is reached; certainly the same man should give more than one brief moment of consideration before accepting a new member into his business family.

Summing up, if the applicant successfully passes the requirements for the position, can look you squarely in the eye, give a firm handshake, has a satisfactory history and meets the tests of a gentleman, the employer can thankfully add him to his staff.

When hiring, the employer should always have in mind three short words, "Care Comes First," and should also remember that the right man for his place exists and can be found.

Getting the Most Effective Service from Your Power Room

Operating Rules for the Industrial Power Plant Which Suggest How That Rigid Economy Can Be Obtained Which Is Necessary if the Individual Power Plant is to Attempt to Compete With the Efficiencies of Power Company Service

By CLAUDE C. BROWN,
Industrial Electrical Engineer

ONE of the maxims of modern industry is—"The greater the product output—the lower the unit cost." This is true whether that product be automobiles or sugar, fuel oil or electric energy. By cutting the manufacturing costs and increasing the output, the unit cost can be brought down to a figure where the product can be placed in successful competition with a similar product in the open market.

From the foregoing it is obvious that the generation of steam or electric power, when performed on a comparatively small scale and as an adjunct to some dis-associated manufacturing enterprise, is hard put when compared as to cost with power from large public utility corporations. In other words, the power furnished by our large power companies, being produced in quantity and by equipment consisting of large units, which of necessity are highly efficient and economical, can be sold at rates which could not be met by smaller enterprises operating smaller and less economical units.

Need for Economy in Industrial Plant

For this reason the success of the industrial power plant, both steam and electrical, is dependent in a large measure upon whether or not it is operated with the maximum efficiency and the strictest economy. This not only applies to the power plant itself but to the remainder of the plant as well.

We might install a small industrial power plant containing the best and most modern equipment, operate it with the highest class of talent and then by careless and negligent waste of steam or power throughout the manufacturing plant entirely lose the benefit of the power plant investment. It is thus a question of rigid economy both in the generation of the power and its use.

The most attractive set of conditions that might justify the installation of an industrial power plant is that in which both steam and electrical power are utilized in the manufacturing process of an enterprise. It then becomes a question, for any given demand, of balancing the steam and power produced.

Typical Operating Conditions

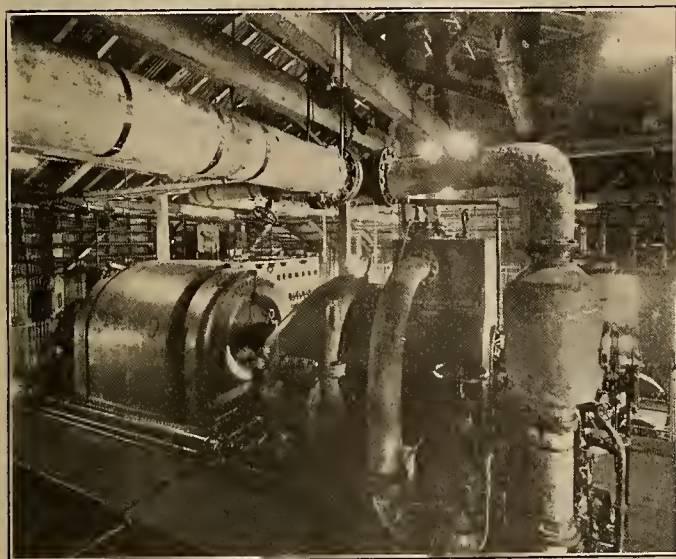
I have in mind a large western plant wherein the manufacturing process requires both steam and electric power. The latter is used to drive all apparatus and the former for boiling solutions, heating water, etc. The electric power plant at this establishment consists of three fifteen hundred-kilowatt noncondensing turbines, to which steam is delivered at one hundred and fifty pounds pressure. The turbines exhaust this steam into an exhaust steam system, the pressure of which varies from ten to fifteen pounds gage pressure. This exhaust steam, as well as a portion of the live steam, is utilized for boiling solutions, heating and drying purposes. The economy of the turbines, exhausting as they do against a ten to fifteen-pound back pressure, is not high and ranges around forty-five pounds of steam per kilowatt-hour of power. Thus it is evident that unless all of this exhaust is effectively utilized and its heat and water content saved, the cost of generation of power by these turbines would be prohibitive. The utilization of this exhaust steam, together with the efficient utilization of a minimum turbine load of electrical power, is the economic problem of the operation of this plant.

Providing for a Uniform Demand

In the first place, it is highly important that the demand upon the power plant be as uniform as possible. The throwing on of the different power loads should be so arranged and diversified that the mini-

imum number of peaks and depressions occur in the load curve. This condition is, of course, dependent upon the manufacturing process, but many times arrangements can be made whereby a demand by one operation can be so timed that it will occur immediately after the completion of some other operation, thereby tending to keep up a steady power demand and prevent peaks and depressions in the power load.

With a given constant power load upon the turbines, it is evident that a given constant amount of exhaust steam is being released from them. This constant flow of exhaust must be all utilized as stated above, in order to obtain the most economical results. In order to accomplish this, the demand by the boiling, heating and drying apparatus, must



The power plant of the Crossett Western Lumber Company at Wauna, Oregon, is a typical industrial installation. The efficiency which can be obtained from such an installation is dependent alike upon the careful supervision of the power room and the careful operation of machinery, so that the load factor is maintained at a high average.

be so handled and diversified that it will consume the exhaust in a uniform manner. When one piece of boiling apparatus is shut down, another must be started up, that it may take its proportionate share of the steam. At no time should the number of steam consuming pieces of apparatus be so large that their combined demand exceeds the quantity of exhaust being furnished and at no time should it be so small as to be unable to utilize all of the exhaust. When all of the exhaust is utilized evenly and continuously we have what is known as a "steam balance" and the cost of the generation of power is negligible due to the fact that the turbines act as reducing valves—reducing the steam from one hundred and fifty pound gage pressure to fifteen pounds, and all of the steam is utilized in the process.

Stopping the Small Leaks

One of the requisites of economy is the minimizing of preventable loss. Loss may occur in the careless design or extension of steam lines. All steam lines should be properly graded and drained and well insulated. All cross connections between steam systems of different pressures should be religiously avoided. Loss may and often does occur in the careless handling of steam. Many times an

excess of steam is allowed to pass into a given piece of boiling or heating apparatus, when a smaller quantity would have sufficed. The result is that the product becomes too hot and time and energy are wasted in waiting for the temperature to drop to the proper point. All valves, both in lines and in steam engines, pumps, etc., should be kept tight and sound so that the proper control may be had.

In processes where steam is used to boil or concentrate solutions, much loss may occur in over-diluting these solutions. All dilution or excess of water content in such solutions requires additional steam for its evaporation.

Common Causes of Loss

From an electrical standpoint, considerable loss may occur due to the running of idle motors. Such practice not only requires power but lowers the power factor on the power plant. All apparatus which is not actually in process should never be allowed to continue running when empty but should be shut down. Another condition that often exists and that is eminently bad practice is the use of motors many times too large for the service required. Such motors never get fully loaded up and as a consequence constantly produce low power factor.

One of the most common sources of abuse is the use or misuse of compressed air. The use of compressed air should be carefully watched and all lines and fittings kept tight. Many times, as much air escapes from the line and fittings as is delivered to the air tool. The same thing occurs in the use of vacuum. The air compressor and the vacuum pumps should be constantly watched as well as all air and vacuum lines. Needless to say the care and upkeep of all industrial power plant equipment should be the best. The quality of supplies used should be the highest and their use and consumption should be reduced to a working minimum. As a case in point the lubricating oil used is handled in a continuous circulating system, whereby a portion of the oil is at all times passing through a Turner oil filter. The quality of lubricating oil used is the best and as a consequence has a maximum life.

Importance of Steam Factor

In conclusion it may be said that the secret of success of the industrial power plant, then, lies in the efficiency and economy of generation and consumption of the power plant product. The size of the industrial power plant, is as a rule small and unless all economies are rigidly observed the cost of its product will be prohibitive. Generally, the efficiency and economy of the power plant organization, assuming of course, that the caliber of these men is high and that it is endowed with an average amount of interest, loyalty and enthusiasm. The thing to watch then, is the operation of the enterprise outside of the power plant, the use of steam power, water, air, vacuum, etc. When all possible waste and loss has been minimized both inside and outside, the industrial power plant will have a chance to show its maximum return.



Delegates and guests attending the fifteenth annual convention of the Northwest Electric Light and Power

Public Relations Theme of Northwest Convention at Boise

Four Day Convention of Northwest Electric Light and Power Association is Held to be Best in Fifteen Years. Report of Range Committee is Classic in its Field.

MEETING in Boise, for four days beginning June 7th, the Northwest Electric Light and Power Association held what was generally agreed to be the best convention in the fifteen years of its existence. The meetings were well attended by a representative gathering of men prominent in the electrical and industrial life of the Northwest. The general meetings were featured by a number of able addresses and the section meetings brought out numerous interesting discussions and papers.

The opening address of welcome, which was made by Governor D. W. Davis, Governor of Idaho, was responded to by Franklin T. Griffith, president of the Portland Railway Light and Power Company. This was followed by the annual address given by the retiring president of the association, W. R. Putnam, vice-president of the Idaho Power Company.

Taxes Held to Be Too High

President Putnam spoke on the general subject of taxation with special reference to the public utilities of the Northwest. The utilities of the Northwest, he said, are paying from 7 to 14 per cent of their gross earnings in taxes, whereas the average merchant pays only six-tenths of 1 per cent of his gross earnings for that purpose. Necessarily utility taxes will bear a higher proportion to gross earnings than do the taxes of merchants, but, in Mr. Putnam's estimation, the present difference is too great. Customers of utility companies, he said, must recognize that taxes on utility property are paid out of rates and that one of the means of decreasing the cost of utility service is to decrease the taxes levied against the public utilities.

These remarks, which were well received, were followed by an excellent address of nation-wide interest by George E. Erb, president of the Public Utilities Commission of Idaho. Beginning his speech called "Random Suggestions" with a discussion of

high taxes in Idaho, he led first to the duties of a public utility commission, and finally to suggested solutions for pressing utility problems.

Commissioner Erb said in part, as follows:

"I am convinced that with all that could be done to reduce expenditures, without action so drastic as to endanger necessary institutions, we would still find our rate of taxation entirely too high.

"In order to give adequate relief, it is necessary to increase the taxable property by the exploitation and development of our natural resources. To my mind, there is only one answer, and that is—development.

"Probably no one factor will be of more importance in this necessary development than the electrical utilities of the state."

"Idaho," he said, "in common with other states, has in the past suffered from the unrestricted operations of promoters, who entered territory either already served or else inadequate to maintain the investment, and through duplication and injudicious expenditure of the capital intrusted to them by credulous investors, brought about conditions which caused bankruptcy and loss of the investment. As a result of this, the legislature tried to regulate the utilities in individual cases, but this method was found to be impractical, and regulatory bodies were created, with legislative jurisdiction, but certain functions both administrative and judicial.

Three Considerations

"In regulating public utilities," Mr. Erb told the convention delegates, "a commission should view each problem from the three sides of a triangle:

"First—Is the service the best possible service, at the least possible price, to justly afford the patron?

"Second—Will the rendering of this service in this manner, and for this price, yield a fair return on the investment, judiciously made, in property used and useful, and reasonably necessary and required in the service of the public?

"And, last: Is the action taken such as will attract capital and encourage further investment in utility enterprises, and thereby aid in the development of the state and exploitation of its dormant resources?



Association assembled in front of the Odd Fellows Hall in Boise, where the general meetings were held.

"Upon the state regulatory body," he declared, "is imposed the duty and responsibility of establishing the policy of the state as to treatment of capital invested in utility property."

A liberal policy alone, he said, can guarantee to the present consumers a continuity of adequate and efficient service. In Mr. Erb's estimation, there is altogether too much antagonism by the users and prospective users of utility service toward the agency which affords them this service. To remedy this condition he suggested an open-door policy with reference to depreciation reserves. Commissioner Erb said that many utility companies and their managing officials looked upon this fund as becoming the property of the utility as soon as it was earned. The depreciation fund, he claimed, is, on the contrary, the property of the patrons until actually used for the purpose of replacing property destroyed, worn out or outgrown. Until so used it is a trust fund for which the utility management is to be held responsible. A proper realization of the character of the depreciation reserve on the part of the utility management would go far, in Commissioner Erb's estimation, toward allaying suspicion, distrust and antagonism.

National President Present

Frank W. Smith, vice-president of the United Electric Light and Power Company of New York, and recently elected president of the National Electric Light Association, expressed his appreciation of the convention in a short address and praised the work of the Northwest in electrical development. M. H. Aylesworth, manager of the National Electric Light Association, who accompanied President Smith on his western visit, expressed the interest of the national body in the development of the West, and praised the enterprise and progressiveness of the men of the industry.

Public Relations Is Keynote

Public Relations may safely be said to have been the keynote of the entire convention, for hardly a speaker did not in some way speak of the importance of building up public confidence in the public utilities of the country. The Public Relations section presented an interesting report, and papers by

Stephen I. Miller, executive manager of the Northwest Electric Service League, George L. Meyers, assistant to the president of the Pacific Power and Light Company, and E. H. Thomas, of the Puget Sound Power and Light Company were well prepared and caused interested discussion.

Both Technical and Accounting sections presented reports which gave evidence of careful preparation and which will add much to the knowledge of these subjects.

The report of the Commercial Section and the paper on "The Electric Range and Water Heater" was perhaps of more general interest than any others presented. The subject of electric ranges is one which is of growing importance in the West, and the information which has been prepared in the past by the Northwest Electric Light and Power Association has been accepted as the most exhaustive and accurate yet published. The present report supplements previous information.

Excerpts from this exceedingly interesting report follow:

Profitableness of Range and Water Heater Load to Central Stations

"Profitableness of range load" is a different subject from "profitableness of range and water heater load." For the range load there is a pretty clear case. The water heater alone looks hopelessness. The range and water heater combination presents a problem but, also, supplies some of the means for its solution and it is far from hopeless.

The cost of power delivered to the distribution system at the sub-station will average around \$57 per kw.-year. From this point on the investment per customer and the operating cost will vary more or less with the class of service. In some sections the distribution system and particularly the transformer capacity are arranged for the range and water heater load and the lighting load completely ignored.

It is necessary to install 3 kw. in transformer capacity for single ranges, 5 kw. for two ranges, 7½ kw. for four ranges and 1½ kw. per range where more than four are connected to one transformer. In one instance a 25-kw. transformer having a connected load of 14 ranges and 10 1-kw. water heaters showed a maximum load of 30 kw. for a period of 25 months and loads slightly in excess of normal for short periods each day, never exceeding 25 minutes.

In adding range load to the ordinary distribution system there is required an average additional investment in the distribution system of about \$75 per range, making an annual investment cost of \$9 per range. Distribution operating costs will average \$6 per kw. and the commercial and general expense or customer costs will average \$7.50 per customer.

Various group tests show that the average range contributes approximately 1.22 kw. to the total simultaneous demand on the distribution system. This average demand of 1.22 kw. is the result of diversity among cooking customers, but there is also a diversity between this demand and the demand of other classes of customers which we have not yet taken into account and which will further reduce the total simultaneous demand on the station.

Investigations indicate that the average range demand on the station is thus reduced from .6 to .9 kw.

For the purpose of this discussion we will be conservative and assume .9 kw.; on this basis the annual cost of service per range is:

Cost of power delivered at the substation.....	\$51.30
Distribution investment cost.....	8.10
Distribution operating and maintenance.....	5.40
Customer costs	7.50
	<hr/>
	\$72.30

The average annual kw-hr. consumption per range is about 1,700 kw-hr. and the cost per kw-hr. is then 4.3c.

The successful development of electric cooking is dependent upon some satisfactory solution of the water heating problem. This problem, however, is fraught with no little difficulty for water heating, in proportion to the power required, is a low value service and moreover the load factor is such as to leave no room for dividing the cost with any other class of service. Naturally the greatest convenience to the customer is supplied by unlimited service, but it costs more to furnish such service than it is worth to the residence customer. Whenever water heaters are taken on for unlimited service at less than \$66 net per year, a part of their cost must be arbitrarily shifted to some other class of service. There is also more or less waste in unlimited service which must be eliminated. Where the heater is left on continuously, the tanks are kept at a higher temperature than necessary for a greater part of the day and night and there is less incentive to properly insulate tanks and piping in order to conserve heat. The peak periods during which water heaters might be cut off in order to most effectively reduce the cost of the service are not of long duration and such interruptions are not seriously detrimental to the service if the means of accomplishing them is not annoying to the customer. Several methods have been suggested for limiting the water heater load, none of them have been very thoroughly tried out in practice, but the most effective and seemingly most workable method yet proposed is the installation of a double throw switch separating the range and water heater and alternating their use. It cannot, of course, be said that all water heater demand will be eliminated from the peak by this method as obviously the diversity obtained in range load means that quite a proportion of all ranges are idle at the time of peak and here, of course, the water heater demand would be active. It is safe to say, however, that 50% of the water heater connected load would be eliminated from the peak and a diversity created sufficient to reduce by 50% the required station capacity and, therefore, the average cost per customer necessary to charge against this service for power delivered to the substation.

Two golden opportunities are open, however, for increased profits: Cut down costs by adopting the one meter universal residence service plan.

Deliver more service at the same expense by increasing the customers load factor.

This discussion is summed up in the following results from our records for the year 1921. There were 246 ranges in use on our system of which about 98% were ranges of high standards, 97 of these ranges were in use in apartment houses; our records are not complete covering the 97 ranges in use in the various apartment houses due to the fact that the servicing and maintenance of these ranges are looked after direct by their owners.

Not taking into consideration these 97 ranges in use in the various apartment houses, the maintenance material cost \$90.20 plus labor cost \$53.75, total maintenance \$143.95 covers 149 ranges. The average maintenance cost of ranges was \$3.69. The average cost of all ranges (exclusive of apartment house ranges), namely, 149, was \$0.97.

Our residence lighting and cooking rate combined load on one meter is 1 to 30 kw-hr. at 9c. and all over at 3c. per kw-hr. with a minimum of \$2.70 per month, this rate being subject to 10% cash discount if paid 15 days from date of billing. The average gross revenue per range customer including lighting was \$5.58 per month.

Officers Are Elected

At the following session the delegates took up matters of a technical nature, the Technical section of the association having the floor. R. M. Boykin, presiding officer, presented the report of the committee, of which the Idaho representative is H. L. Senger of the Idaho Power Company, and general discussion of its features was engaged in.

At the executive session of the general convention the election of officers for the ensuing year took place, the following members receiving the unanimous vote of the assembly:

President, M. W. Brackett, Puget Sound Power and Light Company, Seattle, Wash.; vice-president for Washington, John M. Kinkaid, Washington Coast Utilities, Port Townsend, Wash.; vice-president for Oregon, George L. Myers, Pacific Power and Light Company, Portland, Ore.; vice-president for Idaho, R. B. King, Idaho Power Company, Boise, Idaho, and vice-president for Utah, S. R. Inch, Utah Power and Light Company, Salt Lake City, Utah.

Members of the executive committee appointed were L. B. Faulkner of the Olympia Light and Power Company, of Olympia, Wash.; L. A. McArthur of the Pacific Power and Light Company, of Portland, Ore., and R. J. Moore of the Yamhill Electric Company, of Newberg, Ore.

Address on Water and Power Bill

Fifteen billion dollars every 10 years is the present rate of investment in 11 western states for general development, said Robert Sibley, editor of the Journal of Electricity and Western Industry, in an address Friday.

This statement is made, the speaker declared, following a survey he has made, in cooperation with officials of 58 power companies and executives of over 6,000 industries in these states.

The speaker warned his audience that service and reasonable rates for power must be the ambition of every power company in the entire West. "This ambition realized," he said, "citizens of the West will see to it that private initiative will be given fair and full play."

He characterized the proposed constitutional amendment in California, known as the "Water and Power Act," as a black cloud on the horizon, declaring that, "It is up to the companies and the investors who are holders in power companies to protest against such endeavors and hold the utilities from the hands of a few politicians."

The entertainment features of the convention were well and carefully planned. The delegates and others in attendance were accorded a reception not usually found in larger cities. A feature was the automobile trip to the Arrowrock dam, and all members, delegates and guests after inspecting the remarkable engineering monument were treated to an informal picnic at the dam.

After the annual Kilowatt Golf Tournament for the Kilowatt Cup, presented by the Seattle members in 1919, an informal reception and dance at the Boise Country Club ended the convention.

Eliminating the Waste in Industry

Shortcuts in Management and New Power Applications Which Have Been Adopted in Western Industrial Plants for Eliminating Waste, Increasing Production and Cutting the Cost of Manufacturing Processes

By LOUIS F. LEUREY
Industrial Electrical Engineer

Substitution of Grease for Oil Produces Annual Saving

One of the most important features in the operation of industrial plants is the study of lubrication problems and at the start it must be said that taking industry as a whole there is only a very slight knowledge on the part of the operating departments of the true science of lubrication. The large oil companies are practically the only ones who are equipped with a sufficiently complete technical staff to thoroughly study the problems of lubrication, and all of these companies maintain high class men who are in readiness at all times to furnish their experience to plant managers and superintendents.

A most interesting case showing the great economy that can be accomplished if lubrication is carefully studied is evidenced by a large milling company whose equipment consists of seven floors of line and counter-shafting driving various machine units. This entire system was designed and operated for a considerable period with liquid oil as a lubricant. On account of the very extensive area covered and the number of bearings to be taken care of, it was

THIS DEPARTMENT

will be devoted to a discussion of the various problems of waste in industry as they affect western industrial plants. Readers are asked to aid in the solution of the most vital problems facing industry by sending in accounts and pictures of the various practices for combating waste, which have been adopted in plants with which they are familiar. It is only by thus co-operating with Mr. Leurey that the fullest service can be rendered. Space rates will be paid for all material which is published.

necessary to employ a force of three oilers in order to keep the shafts and bearings in proper condition for operation.

During the past year the superintendent of the company undertook the substitution of a grease lubricant for oil, as the oiling system had become quite a nuisance due to the great amount of oil which accumulated on the floors and which had to be continually wiped up in order to keep the mill in a present-

able appearance and to avoid contamination of the product.

Without making any changes in the bearings as installed, the oiling system was discontinued and each bearing packed with a lubricating grease held together by a proper binder. This system has been given an extended tryout for a period of approximately eight months and has given great satisfaction.

The number of oilers has been reduced from three to one per shift and the nuisance of wasted oil on the floor has been entirely eliminated. While it was impossible to get exact figures on the difference in the cost of lubricants, the operating department is satisfied that the amount of oil previously wasted on the floors would more than pay for the grease lubricant.

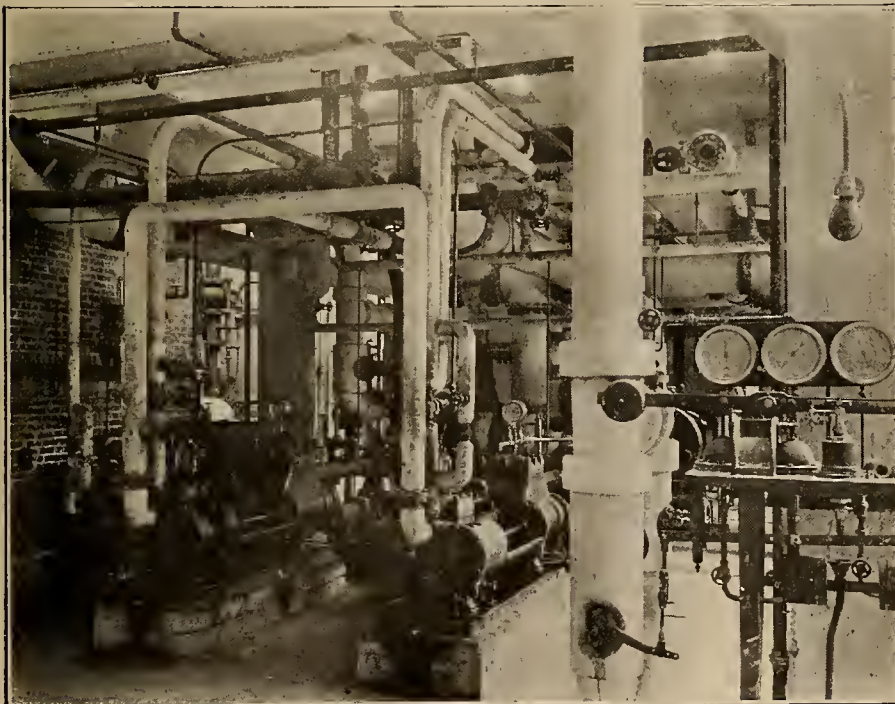
While the problem of lubrication in a plant may seem comparatively simple, the above case demonstrates that there is plenty of room for improvement. Unquestionably there are many other plants where similar savings might be made.

Personal Safety Is Promoted by Effective Warning Signal

In many plants handling bulk product, it is necessary to provide extensive switching trackage so that a number of cars are in storage sufficient to take care of the plant's output. In many of these plants it is impracticable to have locomotive switching and as an alternate cars are moved by various types of car pulling equipment. In some cases these consist of tractors and in others they consist of power driven drums which reel in and out long lengths of cable which are attached to the cars, removing empties and spotting loaded cars.

As a rule this constitutes a very considerable personal safety hazard around the plant due to the fact that these equipments operate very silently and give hardly any appreciable notice that cars are being moved. One company has salved this problem in a very acceptable manner by installing a loud-ringing warning gong of special tone and which can be heard all over the vicinity of the switch tracks. The push button is attached directly to the end of the control lever which throws the car puller into action. By this means it is impossible for the operator to overlook the ringing of the warning bell before the cars actually get into motion.

In other places this feature could be made practically automatic and is one of considerable importance wherever cars are to be moved.



AUTOMATIC BOILER CONTROL RESULTS IN ECONOMIES

View of automatic boiler controlling devices in the plant of the California and Hawaiian Sugar Refining Corporation, Crockett, California. This automatic system has proved a saver of fuel oil by automatically controlling the dampers, the oil supply, and the steam to the burners in direct proportion to the output of the boiler plant, thereby securing the maximum economy of fuel oil per boiler horsepower.

Flexible Source of Power Reduces Cost of Labor

Comprehensive System of Power Supply for Portable Tools Improves Working Conditions at Large Refinery

At the plant of the California and Hawaiian Sugar Refining Corporation at Crockett, California, there has been installed a comprehensive system of power supply for portable sets of tools of all types. This refinery covers an extremely large floor area and consists of several buildings of from seven to nine stories in height. It can be readily appreciated how in buildings of this type there is throughout the year an enormous wastage in labor and time in transporting material and parts from the various shops to the sections of the factory at which the handling of routine maintenance work is under way.

While some jobs are of such a character that the complete bill of material can be gotten out of the shop ready for use, many of them are of such a nature that with a centralized shop frequent trips must be made for special parts and connections.

the total investment is written off in any six-month period of operation.

In addition to the great saving in time and labor effected by these portable tools, they have a value in emergencies which is hard to equate but which is of extreme importance in lessening the period of inactivity following a breakdown. The portable electric welding outfit has performed splendid service in enabling repairs to be made without dismantling the machinery, thereby greatly decreasing the cost on this class of work. Furthermore, the electric welding process leaves the metal in such excellent shape that it can be machined and trimmed as easily as the original metal.

The electrically driven portable fan and blowers have proven great labor savers and expense savers in two ways, first, by making the conditions of operation on heated machines much more

which would be much more expensive if permanent wiring had to be installed.

The personal safety feature is taken care of in the design of this system by equipping the doors of these portable plug outlets with heavy steel spring hinges so that as soon as the electric connections are removed the outlet is immediately sealed by the spring door.

Electrical Laboratory Proposed For Industrial Problems

One of the great problems in spreading the use of electricity for industrial heating is that each application is a rule unto itself. There are many processes now using gas or other fuel for heat which could make use of electric heating elements with profit, both through reduction in costs and improved quality of output. Each factory has its own conditions to be met, however, and it is very difficult to guarantee ahead of time just what effect air currents and other factors will have or just how untried material will act. The manufacturer is sometimes willing to take the experience of a related industry as proof of the advantages in electric heat and he will assume the risk, if it can be called such, of the experiment. There have been cases, however, for which no close analogy was at hand and more than one occasion on which the manufacturer did not care to install expensive equipment until he could be assured by experience that the new application would work.

One possible answer to some of these difficulties was brought out in discussion at the industrial heating session of the recent Pacific Coast Electrical Association convention in Los Angeles. An electrical industrial laboratory supported by all electrical interests of the community interested in this field, was suggested as offering a place in which new problems could be tried out on a small scale. Here the manufacturer could bring his questions to be worked out for him by the electrical experts of the power company and manufacturer. It is, of course, not possible to reproduce complete factory conditions on a small scale and some questions must still be settled on the basis of theoretical calculations, but such experiments could establish the feasibility of certain lines of work without question and would prove invaluable in determining probable costs, insulation needs, problems of temperature control and other factors in a particular situation.

This idea is not entirely original with the electrical industry, having already been successfully carried out by the gas interests. The gas equipment laboratory in San Francisco tests out apparatus and works out specific industrial problems for the new uses of gas. It not only serves as a sales argument to prospective users, but has been of distinct economic service to the community in demonstrating the feasibility of the new fields for gas where it will displace some more wasteful fuel.

The idea as applied to the electrical field is one of many possibilities. Its establishment will undoubtedly wait upon the time when those engaged in selling electrical equipment and electric current will see in it the possibility of a sales argument sufficiently convincing, so that it will pay its own way in increased electric heating in industry.

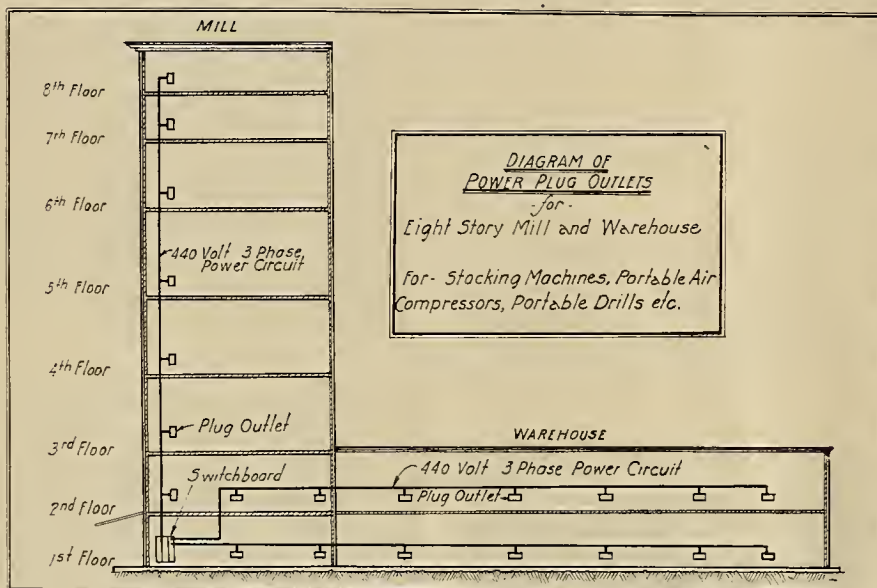


Diagram showing the power circuit and outlets for portable devices of all kinds in an eight-story mill and warehouse. Such an installation reduces labor cost and improves the working conditions of employees.

To obviate this waste the engineering department equipped a full set of tools, including portable pipe machines, drills, blowers, welding outfits both of the acetylene and electrical types, as well as portable pumps of various characters. To enable this equipment to work at any point in the refining areas of the factory, a comprehensive system of power outlets was established throughout all working floors of the factory. To secure economy these plugs were all connected to secure a minimum of conduit and wire and every advantage was taken of the variable character of the demand to reduce the wire sizes to a minimum. The plugs consisted of 440-volt, 3-phase outlets capable of handling anything up to a 15-hp. motor and were so distributed that as a rule 50 ft. of extension cable will connect any equipment to the nearest power plug. Approximately 100 of these plugs have been installed at a total cost of \$2,000 and there is no question but what

bearable to the men, and, secondly, by very materially cutting down the period of inactivity by cooling heated surfaces hours ahead of the time at which they would normally be in shape to be worked upon. In addition to the value secured by the maintenance and repair department an additional use is made of these portable outlets to take care of seasonal conditions that confront the operating department. During the peak of the summer months when large quantities of heated liquid are in storage, large fans are connected to these portable outlets and these fans make the working conditions bearable for the men who have to attend to machines in these extremely hot places. During the winter months these fans are removed without any special investment having been made for wiring. The engineering department has found a wide use for these power plugs in carrying on many types of tests which require the temporary installation of electric motors and

Western Dealer, Jobber and Agent

Business building suggestions for the store—Distribution and warehousing methods—Advertising and sales promotion ideas

Denver Jobber Uses Sales Letters to Excellent Advantage

Sales letters that are interesting and at the same time carry the desired message are a problem nearly every sales manager faces. To keep the letters "freshened up" and to avoid the trade saying, "Oh, here's another letter from Brown," and throwing the epistle into the waste basket, is difficult.

The Mountain Electric Company, Denver jobbers, sends out approximately fifty letters per year to the five hundred or more clients the company has in the Intermountain territory. Moreover, the company has found the letters very effective in maintaining goodwill and keeping clients apprised of new developments in the electrical line.

The letters are prepared by a recognized advertising agency and carry a real message. The fact that John J. Cooper, general manager of the company, is personally acquainted with at least 90 per cent of the men who receive the letters, allows leeway in their preparation and at the same time removes any tinge of impertinence.

The following letter is an excellent example of the type of letter which will not only be read but will also be looked for by the clients of the company:

"George Ade wrote 'Fables in Slang' and got away with it. Now I'm a slangy cuss and I've a mind to unfold a fable—but not of course with the idea of knocking George for a row of billiard balls or taking his meal ticket away from him.

"Well here goes!

"Once upon a time there was a fellow running a shop-store-business to which

the natives were wont to wend their ways when in search of several sorts of electrical goods.

"Came a day in June when old sol swung sultry sunbeams against the fair city and natives, proceeding to perspire profusely, planned to purchase electric fans from our friend the Electrical dealer.

"—only to have that dignitary mournfully mention that he had hardly expected the heat so soon and his fans had not yet come.

"Whereupon there was great wailing and gnashing of teeth and sundry sarcastic comments on the ability and acumen of our electrical friend.

"The grand upshot of the whole works was that dusty old mail order catalogs were revived, many money orders were made out and mailed eastward and lo, in one week's time there came a truckload of breeze provoking fans bearing the name of Rears-Soebuck & Co."

"—whilst the mere Electrical man looked on and readily reckoned that he had been the prize persimmon.

"Verily: the way of the procrastinator is no way to get business.

"Moral: Do your CENTURY fan shopping early. Buy at the lowest price without having to contract for a given quantity and get a "keep-a-running" fan that you will be glad to sell to the best customer you have—by shooting your orders TODAY to

"Yours cordially,

"JOHN J. COOPER."

(Signed)

"P. S. I still think George A— is good and that MY line is 'everything

electrical—and I'd better stick to it.' However, you read this far. So I want that fan order."

The fact that the company is continuing the letters during 1922 after giving them a trial during 1921 is proof of the success of the plan.

Washing Machine Scrubs Money in Salt Lake Store

Keith-O'Brien of Salt Lake City recently used a plan to attract attention to their washing machines and to impress upon people the fact that the machines would not harm the most delicate fabrics. It was successful in both directions. A large number of soiled one-dollar bank notes were secured from a local bank. They were shown in a window of the store with the announcement that at a certain hour of the afternoon they would be put into the washing machine and given a laundering.

People wondered if the store would take such a chance with real money and many of them came back to see. Surely enough, the notes went into the washing machine just as clothes might.

When the notes came out two other devices were given a chance to demonstrate themselves to the interested spectators. One was an electric fan that dried the notes. The other was the electric iron that was used to iron out the notes and make them respectable again.

"A washing machine that will cleanse these paper bank notes is a safe one to use for your delicate fabrics," said the sign on the demonstration's results. A string of the clean notes was run across the window.



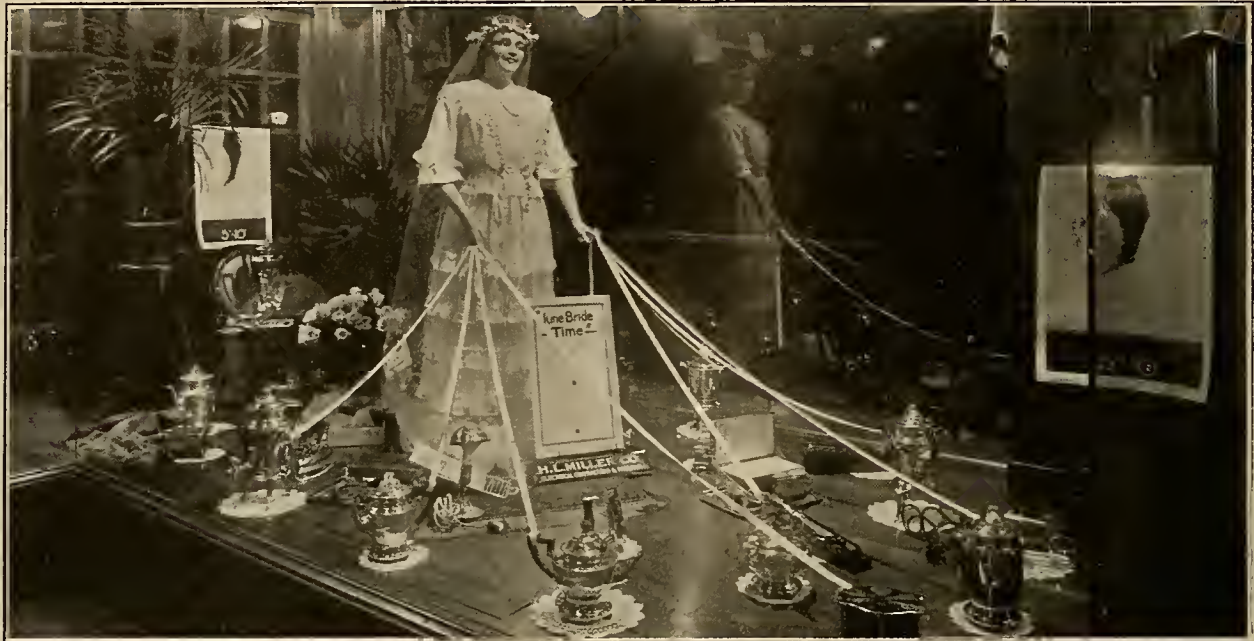
SEATTLE SHOW CAPITALIZES ON RADIO ENTHUSIASM

Seattle recently staged the first Radio Show to be held on the Pacific Coast and derived considerable benefit from the excellent exhibits arranged by dealers, manufacturers, radio clubs and the signal corps of the U. S. Army. The view on the left shows the interior of one wing of the show with the

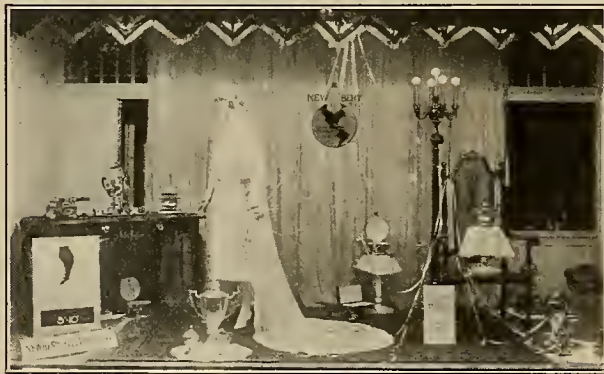
various exhibits. The other view shows the booth of J. J. Agutter and Company, Seattle electrical contractor-dealers. Exhibitions of this type are either being staged or are being planned for other western cities to take advantage of the present radio enthusiasm.

June Bride Week Brings Out Many Window Displays

H. L. Miller Company, Pasadena, Wins Prize Offered by California Electrical Cooperative Campaign for Best Display; Newbery Electric Corporation, Los Angeles, Is Second Best



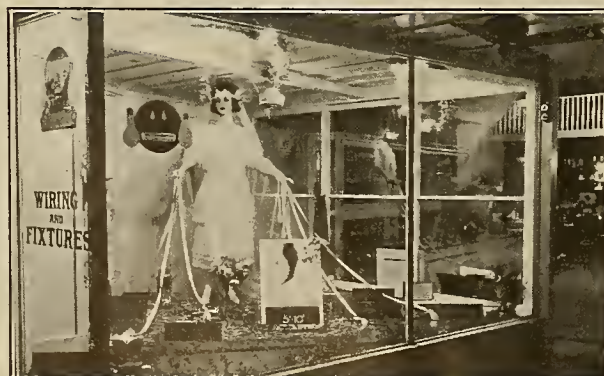
This window display in the store of the H. L. Miller Company, Pasadena, won the prize offered by the California Electrical Cooperative Campaign for the June Bride Week merchandising campaign, one of the most effective ever held in California.



This window display arranged by the Newbery Electric Corporation, Los Angeles, was the most artistic of any, but according to the judges failed to convey the electrical message as well as the one winning first prize. It was decorated by Mr. Holden of the B. H. Dyas Company.



Fred A. Downer and Company capitalized upon the play "Smilin' Through," to carry its message of June Bride Week. Flowers and ferns were further used to emphasize the idea of giving electrical gifts to the June Bride. This window display won honorable mention.



The Southwest Electrical Company, Redlands, is an example of how the June Bride Week idea took hold of the smaller communities.



The Westwood Electric Company, of San Francisco, demonstrated what could be done with the material furnished by the campaign.

Choosing the Most Advantageous Store Location

A Discussion of Some of the Factors Governing the Location of a Store and Properly Taking Advantage of Them

By IRVING B. LINCOLN,

Field Representative, Northwest Electrical Service League

What an electrical contractor-dealer does to make the greatest use of his store location, will depend upon the character of his business and whether that location was chosen to reach the greatest number of retail customers or to furnish a good workshop and save rent. If his business is primarily contracting and he cares little for attracting retail trade, the merchant will choose a place conveniently located which will give him an efficiently arranged workshop at low rental cost and from which his workmen can reach their respective wiring jobs with the least expenditure of time and effort. But, if retail selling is to form a goodly proportion of his business, he will choose his store location with extreme care, after thorough analysis of the densities of pedestrian traffic, the mental attitudes of these densities in different locations, and the characteristics of these people which will make up his prospective customers. If his store is to be small, entirely retail, and dealing in articles which a purchaser can conveniently purchase and take with him in passing, and which will give him the most intensive use of his limited space and the greatest turnover of his capital, he will choose a location in similar manner to that used by the chain drug stores, e. g., he will get as near as possible to the place of the greatest density of the buying traffic determined by count. These stores are generally termed, "convenience stores."

If the store is to be more general, handling all types of appliances, fixtures, and doing some contracting, requiring a workshop in connection, it may have to sacrifice a little of its location advantages in order to get needed display space and work shop. This,

however, is not always the case. The general rule is: study very carefully and determine as near as possible where the greatest number of people will be who will be purchasers of your wares and place your store in that location. The place of greatest traffic is not necessarily the best location. The people should be in a buying attitude and the location should be in a shopping area. If the people are hurrying by on their way to a railway station to catch a train, their density would not help much.

When your location is once chosen it is up to you to make the most of it, attract the attention of the buying public, make a favorable impression upon them, get their interest in the things you are selling, induce them to enter your store and inspect your goods, create in them a desire for the possession of these goods, and then make them satisfied purchasers.

The mere fact that the store is located in the center of that district where the buying public come to make their purchases, will attract attention in itself, and its additional attractions will have all the more weight. If the store is on a street at right angles to the main street but near to it, an artistic sign over the sidewalk will attract attention to the store and mark its location.

Wherever the store is located, the store front and window and its display, will serve as an introduction to the store, attracting attention and making the first impression on the prospective customers, favorable or unfavorable, as the case may be. All impressions that are deep are by no means favorable.

Consider some of the positive qualities that will induce favorable action and aid in securing the greatest advantage

from the location of the store. A clean, neat appearance of the entire store front will be the first to make its impression. A shabby appearance bespeaks a shabby management. As the character of an individual is revealed by the expression and conformation of his face, so is the character of a store and its management portrayed through the arrangement and condition of its front.

The window is the official announcer of the store, and has many tricks of the trade and devices of its own to attract attention, make a favorable impression, and influence people to enter the store to make purchases.

Let us observe a window that performs well the objects of its existence. It has a clean face. One can actually look through the glass without having his vision blurred. It gives an appearance of having life. It has action, its articles of display go well together in presenting a single idea or group of ideas; its colors are live colors and harmonize well with one another; it demonstrates the practical, every-day use of its products, and it is so human that it thinks of not over three ideas at one time. It gets interest at the first glance because of the life, thought, and heart interest it presents. It is so clean and neat and shows so clearly how the appliances can add to personal comfort and convenience at a price that is within reach, that a passerby will decide to go in and investigate further.

One does not have to stumble over a step to get in. The entrance is on a level with the sidewalk and the door opens easily.

The inside is attractive. The show-cases and electrical utensils shine with a clear, brilliant luster. The lighted show cases make the displays doubly appealing and the whole arrangement of the store is so inviting, and represents home conditions so accurately, and demonstrates the practical use, the comfort, and the economy of these electrical servants so conveniently that desire for possession soon grips the prospect. Yes, one is half sold before the salesman approaches.

It is all very true that appearance is only the introduction—the reality is inside. Yes, few people (especially a woman) will doubt the value of getting and holding the attention, stimulating interest, and making a favorable impression by an attractive, impressive appearance, and a pleasing presentation.

These things the electrical contractor-dealer must have if he utilizes his store location to best advantage. He must think about these bigger problems, he must analyze his costs and see that he is doing business at a profit, he must not over-buy but keep his stock down where he can get a quick turnover, and maintain sufficient working capital, and then he must win courteously and aggressively the patronage of the people. He must get in contact with other dealers, he must get a perspective of the business as a whole, and then he must see what relation his business bears to the business of the other contractor-dealers, and the business as a whole. He must think and analyze and humanize, for the people who think, grow,—and growth means life, happiness, and prosperity.



Eleven years ago the E. W. Murray Lighting Company was in a little store on a back street in Spokane. Today it is one of the most thriving establishments in the Northwest. This growth demonstrates what can be done by properly choosing a store location. That advantage is taken of the location is demonstrated by the fact that one hundred and fifteen people stopped to view the above window display within half an hour.

Activities of the West

A Business Man's Department Devoted to Events and Developments in Western Industrial Centers—Including News of Interest to Readers in Public Utility, Industrial and Trade Fields

Los Angeles Banks Merge Newly Organized Southern California Financial Institution Has Capital of \$200,000,000

A merger of Pacific-Southwest banks, involving resources of approximately \$200,000,000, headed by The First National Bank of Los Angeles, the Los Angeles Trust & Savings Bank and the First Securities Company, of which organizations Henry M. Robinson is president, becomes effective at the close of business June 30.

The twenty-four cities containing banking institutions affected in this merger are as follows:

ALHAMBRA
Alhambra Savings and Commercial Bank.
CARPINTERIA
Branch of Commercial Trust & Savings Bank, Santa Barbara.
CATALINA ISLAND
Avalon Branch of Los Angeles Trust & Savings Bank.
FRESNO
Fidelity Trust & Savings Bank.
GLENDALE
Glendale Avenue Branch, and Brand Boulevard Branch of the Los Angeles Trust & Savings Bank.
GUADALUPE
Branch of Bank of Santa Maria.
HANFORD
The Farmers and Merchants National Bank.
Hanford Savings Bank.
HOLLYWOOD
The First National Bank of Hollywood.
Hollywood Savings Bank.
HUNTINGTON BEACH
Branch of Los Angeles Trust & Savings Bank.
HUNTINGTON PARK
Branch of Los Angeles Trust & Savings Bank.
LINDSAY
Lindsay National Bank.
LOMPOC
Branch of Commercial Trust & Savings Bank, Santa Barbara.
LONG BEACH
The City National Bank.
LOS ALAMOS
Branch of Bank of Santa Maria.
LOS ANGELES
The First National Bank of Los Angeles.
Los Angeles Trust & Savings Bank, with twenty branches in the city of Los Angeles.
First Securities Company.
ORCUTT
Branch of Bank of Santa Maria.
OXNARD
First National Bank.
Oxnard Savings Bank.
PASADENA
Union Trust and Savings Branch of Los Angeles Trust & Savings Bank.
REDLANDS
The First National Bank of Redlands.
Savings Bank of Redlands.
SAN PEDRO
Marine Branch of Los Angeles Trust & Savings Bank.
SANTA BARBARA
Commercial Trust & Savings Bank.
SANTA MARIA
Bank of Santa Maria.
TULARE
National Bank of Tulare.
Savings Bank of Tulare.
VISALIA
First National Bank of Visalia.
Producers Savings Bank.

Under the form of the merger, the stock of all of these institutions is

pooled and beneficial certificates are issued to all present stockholders, giving to each a pro rata ownership in all of the merged institutions.

Following the merger plan, it is announced that all merged banks will operate under the name of the Los Angeles Trust & Savings Bank, with the exception of the First National Bank of Los Angeles and the First National Bank of Hollywood. The latter will be taken directly into The First National Bank of Los Angeles and will operate as the Hollywood agency of The First National Bank of Los Angeles.

In working out this consolidation no banks have been bought out. Each bank goes into the merger on an even basis, and, as a result, it is stated that no one set of stockholders has benefited at the expense of others, the whole plan being based upon the setting up of an equitable partnership between the various banks merged—a partnership in which local officers control local business. There will be no changes in the personnel of officers and employees in the various cities.

Following the merger, it is announced that the First Securities Company will parallel in the field of investment the banking service to be rendered throughout the Pacific-Southwest by the merged institutions.

The First Securities Company will furnish underwriting assistance to sound California enterprises of good management and proven earning power, and will recommend to investors good securities which have first been carefully investigated and are deemed worthy of investment by the banks' own funds.

In creating this merger no effort has been made to achieve "bigness." The plan has been to unify some of the best banks of the Pacific-Southwest occupying key positions in the various districts, in order that more complete financial assistance may be given the marketing of the various seasonal crops of the Southern California territory from Fresno south to the Mexican line, and to provide the necessary financial machinery for the upbuilding of this territory upon balanced lines.

It is announced that the merger has been the result of two years of careful investigation of the needs of the Pacific-Southwest. Particular attention in this investigation has been given to the working out of plans whereby the credit of the community may be equitably allocated to the various agricultural and business interests of the entire Pacific-Southwest.

The government has announced that it will build a half-million dollar sea wall at the Puget Sound Navy Yard.

Oak Grove Project Approved Federal Commission Issues Permit for Portland Railway Light & Power Company's Development

Final approval of the Oak Grove development project being carried on by the Portland Railway Light and Power Company, has been given by the Federal Water Power Commission in Washington, D. C.

The Oak Grove project, which is located on the main fork of the Clackamas river, 35 miles from Portland, has for its ultimate object development of 100,000 hp. The initial development will be 33,000 hp. and this part of the project will be completed within two years. This project is unique in western developments in that it has unusual storage possibilities making possible the operation of the plant at practically 100 per cent load factor the year around. Several hundred men are now engaged in building a road to the site of the plant and operations are being planned so that work can be carried on in winter as well as summer.

Other work being done by the company this year includes the installation of an additional 5,200-hp. generator in the Bull Run hydroelectric plant, the installation of a 3,000-kw. auxiliary steam plant in the city of Salem, and many extensions of the distribution lines of the company about the city of Portland, mostly to supply new districts. A greater force of linemen is now employed than ever before in the history of the company. Construction expenditures in all departments in 1922 will exceed \$2,000,000, and a considerably larger sum of money will be necessary to carry out the 1923 improvement program.

Electrification of the Great Northern Railway involving an expenditure of \$20,000,000, in which work Seattle will be established as western terminal for the distribution of electrical equipment, has been announced by J. H. O'Neill, western general manager of the road. The first step in the electrification, according to O'Neill, would be between Whitefish and Havre, Montana, with the next step over the Cascades between Wenatchee and Seattle, Washington. Work will not start until 1924.

When the Secretary of the Interior proposed to discontinue the Denver office of the U. S. Reclamation Service and transfer the work done there to the Department in Washington, it aroused such opposition on the part of landholders within the government projects, that the order has been held in abeyance and undoubtedly will be rescinded.

Events in Washington of Interest to Western Men

A Survey of Recent Developments in the Nation's Capital by
Paul Wooton, Special Correspondent of the Journal
of Electricity and Western Industry

Particular significance is attached to the testimony of Secretary of Commerce Hoover before the committee on irrigation of arid lands of the House of Representatives in regard to the utilization of the waters of the Colorado River and the construction of the Boulder Canyon dam. The committee is conducting hearings on the Swing Bill, which among other things would appropriate \$70,000,000 for this purpose. A portion of Secretary Hoover's statement before the committee is as follows:

"The Colorado River Commission, of which I am chairman, to represent the Federal Government, is sitting now in an endeavor to develop an adjustment of the interstate rights to the water. At the end we no doubt will offer some recommendations as to a long view program for the development of the river. No agreements have been reached as yet. The Commission reassembles on August 1 at Santa Fe to consider the matter further. In the meantime there has been a decision of the United States Supreme Court which considerably advanced the whole question of interstate water rights.

"The annual freshets on the river must be controlled, not only from the point of view of storage and retention for beneficial use, but from the point of view of safety to the lower river. The Imperial Valley is in great danger at the present time. Almost at any moment in one of these freshets the valley may be drowned out by the breaking of the river into the Salton Sea. That danger has become so imminent that the people in that area are having difficulty in obtaining mortgages and in borrowing the money necessary to carry on their businesses. The bankers throughout the southern part of the state have become fearful that action may not be taken in time to assure the safety of the large investments already made. The people are finding great difficulty in financing themselves.

"I think all of the members of the Commission are in agreement that the first step is the construction of a large dam somewhere in the neighborhood of Boulder Canyon. There may be some questions of foundations that may shift the site of that dam 15 or 20 miles in either direction but there is no question but that the first step, so far as that area is concerned, should be in the development of this point.

"I think this legislation should go forward because the emergent situation in the Imperial Valley requires almost immediate action in the control of the river. I do not think the states of the lower basin will raise any objection to a provision in the bill that the erection of the dam itself is to create no water rights as against them. I think the minds of the upper states could be relieved entirely by a provision that the erection of the dam in itself is not to create water rights.

"The theme that seems to meet with more general approval than any other is that each state could proceed with its development up to the absorption of a

certain number of acre-feet per annum, leaving a considerable residue of the river unappropriated. Twenty-five or fifty years hence they could assemble again and discuss what will be done with the remainder. That would give an ample period to work out the relative rights of the different states based upon the relative amount of land which they could bring into irrigation.

"I do not think there is any intrinsic dispute about the power question. There is a general realization that power must be sold where it can bring a return. There is also the realization that the river at its maximum development will produce five or six million horsepower, so the production of five or six hundred thousand horsepower at Boulder Canyon is not the ultimate limit of what can be secured. I do not believe you will find there is much anxiety about that question. There is anxiety as to whether there shall be priority in the use of water for agriculture over its use for power—a question which undoubtedly will be established in the recommendation of the commission. My feeling is that federal legislation at this time needs to be confined purely to the question of the erection of storage works at Boulder Canyon.

"I think the all-American canal should be built. There are many reasons why the United States should be independent of Mexico in the distribution of the Colorado River.

"The Boulder dam will cost in the neighborhood of \$40,000,000, perhaps. My offhand impression is that 200 years hence when we will have developed all the land that can be developed by the river, we will have spent \$400,000,000."

The economic advantage of developing Muscle Shoals on the Tennessee River is being subordinated to the political aspects of this project which is coming in for so much discussion on Capitol Hill. At this writing it seems certain that no offer for the Government's Muscle Shoals properties will be acted upon, but as a result of the controversy it is practically certain that the Government will reopen the work on the Wilson dam.

A bounty to encourage the production of domestic potash has been put forward by the Senate Finance Committee in lieu of the tariff. The rates carried in the tariff bill which passed the House aroused determined opposition on the part of the farmers who use fertilizer. They contend such a tariff would cost them more than \$50,000,000. Chairman McCumber of the Finance Committee has pointed out that since the possibilities of domestic production are limited, there would be a great saving in giving a bounty equivalent to the protection which would have been granted by the tariff, such as proposed by the House.

While the potash producers have interposed no objection to such a course, it is recalled that the sugar bounty was highly unpopular and soon was repealed. Some foresee similar action with respect to a potash bounty.

Oroville Plans to Purchase Lines of Pacific Gas & Electric Co.

Just compensation for the electric distribution system and gas property in the city of Oroville, which the city plans to take over from the Pacific Gas and Electric Company, was fixed by the Railroad Commission in a decision announced recently. The values are determined as of August 15, 1918, the date of the application. For the electric system, including lands, property and rights, compensation is placed at \$90,861. The gas property is valued at \$50,000. Severance damages are put at \$6,177 if the city takes over only the electric system and at \$1,954 if the city should acquire both properties. In arriving at the amount of compensation the Commission announced that it followed in general the methods used in the Auburn case, recently affirmed by the Supreme Court.

The commission rejected the contention of the Pacific Gas and Electric Company that prices and costs obtaining on the date of the filing of the application must be used. Discussing this contention, Commissioner H. Stanley Benedict, who wrote the opinion, said:

"Aside from the fact that the valuation presented by the company's engineers itself violates this theory within a wide margin, the Commission should, in my opinion, reject this theory. No public utility plant of any size can be built in one day. The Commission, in the valuation work done by its own engineering department should adhere to the rule laid down in the Redding case that valuation estimates must be predicated upon a normal and reasonable construction period under normal and reasonable construction conditions and this rule should have its influence on the labor and material costs and on the so-called overhead allowance applied to an inventory."

Portland Company Lets Contract for New Hydro Plant

The Pacific Power and Light Company, with headquarters at Portland, has announced that a contract has been awarded to the Phoenix Utility Company of Portland to build the company's new hydroelectric plant at Hood River, Oregon, at a cost of approximately \$1,250,000. The plant will have a capacity of 7,500 kw.

Water will be diverted from Hood river by a dam and conducted to the power plant through a pipe line approximately two and a half miles in length. Work is to begin at once and it is expected that the plant will be completed by February, 1923. The Northwestern Electric Company of Portland will purchase a block of the power to be generated.

The Pacific Power and Light Company operates electrical generating plants and transmission and distribution lines through the Columbia, Walla Walla, Yakima and Snake river valleys and its lines serve the cities of Astoria and Seaside near the mouth of the Columbia river.

The Yamhill County Mutual Telephone Company, with headquarters at Dayton, Ore., has petitioned the circuit court of Yamhill county to enjoin the Yamhill Electric Company from constructing an 11,000-volt line on the county road leading out of Dayton, because of the interference the operation of this line will cause with the transmission of telephonic messages over the company's grounded circuit telephone system.



Interior of the bakery department of Zion's Cooperative Mercantile Institution, Salt Lake City, one of the largest department stores in the West, showing the newly installed electric bake oven. Sixty such ovens are now in use in this intermountain city.

Salt Lake Store Installs Large Electric Bake Oven

Zion's Cooperative Mercantile Institution at Salt Lake City, one of the largest department stores in the West, has recently established a well equipped bakery department, where a large electric bake oven has been installed.

This is one of the largest of the sixty ovens now in use in Salt Lake City, and is operating with the same uniformly satisfactory results as the others.

The management of the above institution chose the electric oven because of its many outstanding features, such as uniform baking, cleanliness, the small amount of space required, flexibility of heating, absence of fumes and smoke, ease of control and nominal operating cost.

The oven is of the latest type Edison portable. It has a capacity of 270 loaves per hour, and can continue to bake bread or pastry at this rate indefinitely.

The oven is of the multiple deck type, has three compartments with heating coils above and below each compartment, each coil being controlled by two three-heat switches.

Electric lights illuminate the interior of the oven, and live steam is used for the baking of Vienna bread, hard rolls, and to produce the thin, shiny crust on pan bread.

Since the establishment of their own electrically equipped bakery the retail sales of bakery goods of the above institution have increased as follows: bread, 300%, Parker House rolls, 500%, and pastry, 300%.

Besides giving information as to the location and extent of the irrigable and irrigated lands of the state, the map shows the location of the principal irrigation and power canals and conduits, existing reservoirs, rainfall and stream gaging stations, and existing hydroelectric developments.

Portland Firm Receives Record Order for Logging Machinery

What is said to be the largest order ever given on the Pacific Coast for logging engines and equipment has been placed with the Willamette Iron and Steel Works of Portland by the Sugar Pine Lumber Company of Fresno, California, a concern which is putting in a \$5,000,000 plant in the vicinity of that city. The order is for 20 donkey engines, skidding machines and cars for an aggregate sum of approximately \$350,000. Each of the donkeys will be equipped with a 200-horsepower motor of a special design. This will be the largest installation of the kind in the country. Several of the large lumber mills of the Northwest have been using electric logging engines in their logging operations for several years with great success.

Portland Shipyard to Build New Lumber Schooner

The first steam schooner contract to be awarded on the Pacific Coast since early in 1920 has been let to G. F. Matthews, who has taken over the wartime yard of the Peninsula Shipbuilding Company. A wooden lumber schooner, 225 feet in length, driven by a 750-hp. triple expansion steam engine, and having a lumber carrying capacity of 1,300,000 feet, will be built for S. S. Freeman and Company, of San Francisco, operators of the widely known Daisy Fleet.

The plant of the Peninsula Shipbuilding Company is the only wooden shipyard in the vicinity of Portland, which handled wooden ship contracts for the U. S. Shipping Board during the war, which has not been scrapped, the plant still being practically intact. The resumption of wood shipbuilding here is enthusiastically received by the business men of Portland as it is felt that this will be a permanent industry because of the adaptability of wooden schooners to the coastal lumber trade. The wooden ships built for the shipping board during the war are unsuitable for lumber carrying because of the construction of the hatches.

Newly Discovered Utah Cave is Now Electrically Lighted

Mt. Timpanogos cave, the most recently and possibly the most unique addition to the scenic attractions of the Wasatch Mountains in Utah, is now fully equipped with a system of electric lights which illuminate the interior of the cavern and its many scenic nooks and corners, in an effective manner.

The cave is located in American Fork canyon, a few miles east of American Fork. It is under the supervision of the supervisor of the Wasatch national forest, who has been instrumental in throwing it open to the public by making it accessible.

The cave is said to contain some of the most beautiful stalactite and stalagmite formations known at the present time.

Conduit has been used to encase the electric wires, and the lights have been placed in position where they can best illuminate the formations.

Northwestern Electric Co. Gets Permit for Lewis River

The Northwestern Electric Company of Portland has been granted a permit for one year by the federal power commission for a power project on the Lewis river, Washington, about 35 miles from Portland, the plans for which contemplate construction of a dam 200 ft. high, to create a storage reservoir of 200,000 acre-ft. capacity.

A power house will be located at the base of the dam to develop 20,000 kw. This plant will be located near Yale, Washington, and will cost approximately \$3,000,000. The period of the permit will be utilized in continuing engineering investigations of the site and in preliminary plans for use in connection with application for a license. It is not expected to go ahead with work on the project this year as the entire ground will have to be gone over and a complete survey of the territory made first.

Irrigation Map of California Ready for Distribution

A new irrigation map of California combining irrigation features with relief and a completely revised base has just been completed by the Division of Agricultural Engineering of the U. S. Department of Agriculture with headquarters in Berkeley, California, co-operating with the State Department of Public Works and the College of Agriculture of the University of California, and is available without charge on application to any of these agencies. It is printed in nine different shades or colors on a scale of 8 miles to the inch, and is issued mainly as separates embracing northern, central, and southern California. A limited edition is also being printed in 4 sheets to mount as a single map of the entire state, measuring 79 by 93 inches.

The preparation of this map has involved the location and field platting of 5,999,300 acres of irrigated land out of a total in the state of 23,912,200 acres found to be irrigable to the extent water is available. The figures show California well in the lead of all of the western states both as to irrigated and irrigable areas.

Idaho Irrigationists Seek Permit For Snake River Project

The Murtaugh irrigation district has applied to the federal power commission for a permit to develop power in Snake river, Idaho, by constructing a diversion dam above Auger falls, with a canal two and one-half miles long to a power house on the mouth of Rock creek. A small amount of power will be developed by constructing a diversion dam one and one-half miles above its mouth and conducting the water by canal to the power house.

The Mutual Power Association, composed of three irrigation districts in the vicinity of Weiser and Payette, Idaho, has applied for a permit to develop power in Crane creek, in Washington county, Idaho. The applicant proposes to divert the stream through a three-mile conduit to a power house. The power is to be transmitted twenty-five miles to three pumping stations on Snake river, one just above Payette and two between Payette and Weiser, to be utilized in pumping water for irrigation.

Spokane Home Electrical to Be Finished on July 12

The electrical home now under construction for the Electrical Service League at Fourteenth and Bernard streets in Spokane will be completed so that it can be thrown open to the public July 12, according to announcement by R. B. McElroy, chairman of the committee in charge of the work.

This will be a six-room bungalow of Mission style built of hollow tile faced with magnesite stucco. It has been built to include all practical modern electric home conveniences.

"We expect at least 10,000 people to inspect the home during the two weeks that it will be open," said Mr. McElroy. "Similar enterprises in California brought out 15,000 people."

"The league will furnish the house from cellar to garret with Spokane made furniture and fittings. Visitors will not only see all the home electrical appliances but will see how well Spokane manufacturers can outfit homes."

"Each visitor will be given an illustrated booklet prepared for the occasion by the league which will describe the home and all its features in detail."

The Northwestern Electric Company, it is reported, is installing a high power radiophone set at its hydroelectric generating plant at White Salmon, Washington, about 75 miles from the city of Portland. The transmitting unit, it is stated, will be of 1,500-watt capacity. The set will be used to insure communication with the plant under all conditions. Some trouble has been experienced with the telephone line on the transmission poles during storms and other adverse conditions. A similar transmitting set will be installed at Portland, and receiving sets will be installed at both locations.

Word has been received that the American Association of Engineers will hold their national convention in Portland in 1925 and that the association indorsed the 1925 Exposition at their annual convention held in Salt Lake recently.

Government Holds Hearing on S. F. Bay Terminal Plan

A special commission composed of one representative each from the departments of War, Commerce and the Navy conducted a hearing in San Francisco on June 12 to give all interested parties an opportunity to present opinions and objections on the application of the San Francisco and Oakland Terminal Railway for permission to reclaim 170 acres of shoal land adjoining Goat Island and to construct thereon a Union Terminal for the use of interurban systems, automobiles and transcontinental railroads.

Major-General Lansing H. Beach, chief of engineers, U. S. A., was chairman of the hearing, Admiral A. S. Halstead, commander of the Twelfth Naval District, represented the navy and C. H. Huston, assistant secretary of the U. S. Department of Commerce, represented that branch of the government. Colonel Herbert E. Deakyn, San Francisco office, Engineer Corps, U. S. A., served in an advisory capacity.

J. S. Drum, chairman of the board of the railway company, reviewed the transbay traffic situation and the advantages of the proposed terminal, pointing out that the company was quite willing to have other transportation companies join in the project. Edward M. Boggs, consulting engineer for the company, presented the engineering aspects of the plan. In his opinion bridge or tunnel projects that would supplant the ferry service for commuters was in the far distant future and meantime, at a reasonable cost, the present 18- to 20-min. ferry trip of 2.85 miles could be reduced to a 10-min. trip of about 1.6 miles. Last year the ferries of the Southern Pacific and Key Route systems combined handled 45,000,000 transbay passengers.

Since the greatest item of cost in connection with the proposed Union Terminal would be the crossing between the east shore and the reclaimed land near the Island, the application asks for as much concession on this point as can be granted. A solid fill 200 ft. wide was declared to be the most desirable.

Such a fill would not exert any important influence on tidal flow, Mr. Boggs believed, or interfere seriously with bay traffic since the alternative route around Goat Island is wide and deep and for most all the traffic is little, if any, longer. However, if permission to build a solid fill could not be granted, a combination fill and trestle was suggested. The requirement that the channel be kept open to navigation by the construction of a drawbridge or even a viaduct to allow clearance for comparatively small vessels would make the cost of the plan prohibitive, he thought.

Representatives from other companies and neighboring cities expressed interest in the plan but nothing tangible was raised in the form of objections.

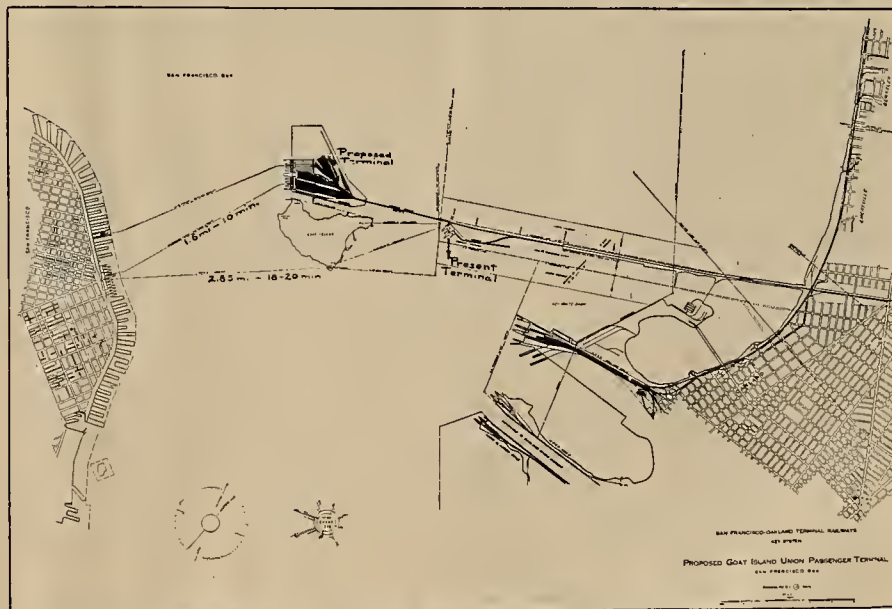
Based on the hearing and the conclusions reached after a first hand study of local conditions, the committee is to make recommendation so Congress by which body final action on the application must be taken.

Northwest Lumber Exports Show Gain of 206 Per Cent

According to figures compiled by the Merchants Exchange department of the Seattle Chamber of Commerce, waterborne lumber shipments from ports in the state of Washington reached the enormous total of 145,830,000 ft. in May, as compared with 47,520,000 ft. for the corresponding month of last year. The gain is 98,310,000 ft. or more than 206 per cent.

Maintenance of the May record would mean a movement of almost 2,000,000,000 ft. in a 12-month period.

Puget Sound ports led the van in the gigantic shipment, in May shipping 68,771,000 ft. by water, as compared with 17,079,000 ft. for the same month of last year, a gain of 51,692,000 ft. Grays Harbor shipments totaled 64,584,000 ft. as compared with 25,146,000 ft. for May, last year, a gain of 39,438,000 ft. Willapa Harbor shipped 12,475,000 ft. as compared with 5,295,000 ft. for May, 1921, a gain of 7,180,000 ft.



A portion of San Francisco Bay showing the existing ferry lines and the proposed terminal, which will cut off the running time of ferry boats by ten minutes. Government officials looked favorably on the plan at a recent hearing in San Francisco.

Radio on Southern Pacific Train Sets News Records

All transcontinental radio records were shattered by the wireless-equipped Shriner train of twelve cars carrying the Syrian Temple delegation from Cincinnati, Ohio, which was recently handled by the Southern Pacific. A long distance receiving record of 2,000 miles for radiophone was established, as well as a 3,000-mile record for telegraph reception while in motion.

Aerials were constructed eight inches above the roof of one of the forward cars and were 160 ft. in total length. A rail ground was used. The receiving equipment included honeycomb coils and a two-step-audio-frequency amplifier.

The train left Cincinnati in radio touch with both coasts. At Denver, music programs were copied from the big stations at Pittsburg and Chicago. At Colorado Springs the Cincinnati station was heard. The long distance record was made at Santa Barbara when the radio while the train was in motion picked up the United States government station NSS at Annapolis, 3,000 miles away. This is claimed to be a record for daylight reception under any conditions and an astonishing record on two steps of amplification from a moving train.

British Columbia Company Starts Work on Stave Lake Plant

The British Columbia Electric Railway Company, Ltd., has commenced work on a new 640-ft. dam and on the rebuilding of the dam at Stave Lake, near Vancouver, B. C., which was washed out in the floods of last fall. More than 200 men have been employed on the work, and, as the work progresses, at least another 100 men will be required. The cost of the new dam and the repair to the old one is estimated at \$1,250,000.

The B. C. Electric Railway Company, Ltd., has commenced work on the extension of its Broadway West line, in the city of Vancouver, B. C. It is estimated that the extension will cost in the neighborhood of \$75,000.

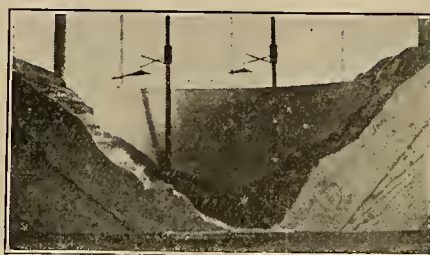
Portland to Vote on 1925 Fair Tax in November Elections

The fate of the 1925 exposition will rest with the voters of the city of Portland at the general state election in November. At this time an initiative measure to raise a fund of \$3,000,000 by taxation to finance the exposition, will be submitted for their approval.

The requisite number of signatures having been obtained insures the measure a place on the November ballot. Although the petitions were circulated throughout the state, the measure will be voted upon by the voters of Portland alone. Simultaneously with the campaign for the adoption of the tax measure there will be carried on a public stock subscription of a state-wide character, there being no stipulation as to quota or district. An exposition tax commission will be named by city ordinance to administer the funds raised by the taxation. Public stock subscriptions will be under control of the stockholders, who in turn will select the board of directors, from which the managing officials will be named.

Types and Costs of Dams Shown By Small Concrete Models

In making final studies of the comparative costs and advantages of several types of dams to be built in California on the Merced River for the Merced Irrigation District, models of three types under consideration are being used. In addition to facilitating explanation and discussion before the district board of directors, each model is used as a check on the estimated yardage by measuring its displacement in water. Another advantage of the plan is said to be in making the layout of the construction plant. R. C. Starr, under whose direction the work is being done, said that "it is much easier to make a construction plant layout, determine chute slopes, trestle locations, etc., from the models than from blueprints."



A small replica of the Exchequer Dam being constructed on the Merced River in California by the Merced Irrigation District.

The first step in making the models was the construction of a relief map of the damsite, each contour being built up in wood on a scale of 20 ft. to the inch, or 1 to 240 both horizontal and vertical. After waxing the side slopes to prevent concrete from sticking to them, up- and downstream forms were placed and concrete was poured in a miniature dam. This process was repeated for the three types under consideration—gravity arch, pure arch and constant angle arch dams. As the three structures were made from the same materials, the weights as shown by water displacement were used to check the estimated comparative yardages.

Mr. Starr credits the idea of using models in this way to R. L. Bryant, resident engineer, and J. D. McDougald, general superintendent, on the Merced project.

Portland Woolen Mills Gets Big Contract from Ford

A contract for 150,000 yards of seat covers for Ford sedans and coupes has just been closed by the Portland Woolen Mills Company, and the material will be shipped to Detroit immediately. The price paid by the Ford company for this order exceeds a quarter of a million dollars.

The entire order will be made up of wool grown in Oregon and manufactured in Portland. Aside from the quality of the product, one reason that the order was placed with the Portland concern was because it was prepared to ship a large quantity within a short time. This plant has a capacity of more than 1,200,000 yards yearly, greater than any other woolen mill west of Cleveland, Ohio. The mill runs 24 hours a day, employs 400 workers, and is completely electrified.

Books and Bulletins

FINANCIAL ENGINEERING

By O. B. GOLDMAN, consulting engineer, Professor of Engineering, the Oregon State Agricultural College, Honorary Member, Local 87, I. U. Steam and Operating Engineers, Member, Oregon Society of Engineers, etc. 6 by 8 in. 272 pages. 51 diagrams, 103 tables. John Wiley & Sons Company, New York.

In spite of the fact that the author claims that financial engineering such as is exploited by this book does not invade the field of economics and that it extends engineering over business and administrative problems, yet a careful review of the book indicates that the author has pointed out precise arithmetical methods for determining the relative economy of many different individual applications upon a dollars and cents basis. The invention by the author of the transbance opens up an interesting new field for engineering study. By the application of the methods outlined in describing this test the performance and ultimate economy of complicated installations may be readily compared.

The book is replete with many problems so that it may readily be used as a text book.

S. E. D. Will Issue New Booklet on Electrical Homes

The Society for Electrical Development is preparing for issue in July a booklet on "Organizing and Exhibiting the Electric Home." It will be profusely illustrated and contain sixty-four pages. The subject will be treated in several sections under the following heads:

Foreword
Historical Foreword
The Value of an Electrical Home Exhibition
Starting an Electric Home Campaign
Organizing an Electric Home
Financing the Home
Securing the Home
Arranging for Wiring, Appliances, Decorating and Furnishings
Advertising and Publicity
Exhibiting the Home.

The usual number of copies of this booklet will be distributed to members of the Society who can also obtain extra copies at cost. The booklet will also be made available to non-members of the Society at a price to be fixed.

Auxiliary Steam Plant Will Be Built at Salem, Oregon

The present steam generating station of the Portland Railway Light and Power Company at Salem is to be dismantled and replaced with a modern turbo-generator having a capacity of 3,000 kw. New boilers and other auxiliary equipment will be installed at the same time. The total cost of the new plant will be about \$170,000. Saw mill refuse will be used for steam generation. The city of Salem is now supplied over two 60,000-volt transmission lines from the company's hydroelectric plants in the vicinity of Portland and the purpose of the new steam plant is to provide the city of Salem with adequate power in case of failure of either of both of these lines.

Meetings of Interest to Western Men

A. A. E. Holds Annual Convention in Salt Lake City

The eighth annual convention of the American Association of Engineers was held at Salt Lake City June 5th to 7th inclusive.

At the first session, which was called to order by H. G. Harmon, president of the Salt Lake chapter of the association, C. C. Neslen, mayor of Salt Lake City, was introduced, and formally delivered the keys of the city to the visitors.

National President Harry O. Garman of Indianapolis delivered his annual address, in which he emphasized the necessity for constant attention to the ideal of service and to progress in all fields of engineering.

The convention endorsed as a body the candidacy of A. B. McDaniel, a member of the civilian advisory board of the general staff of the war department, for the position on United States Civil Service Commission left vacant by the appointment of former Governor Bartlett of New Hampshire to be second assistant postmaster general. This endorsement was voiced in a telegram sent to President Harding, Senator Sterling and Senator James Watson.

Improvement in salary conditions for federal employes was urged in a resolution adopted at the second day's session. The resolution was as follows:

"Resolved, That the American Association of Engineers, in convention assembled, realizing the necessity for prompt action to secure living salaries for federal employes, respectfully urges that the bill, H. R. 8928, be reported out of the appropriations committee in the form presented to the senate, so that it may be passed as soon as practicable."

Discussions of various subjects were led as follows:

"Principles of Chapter Success," G. R. Fancett of Tucson, Ariz.; "A Standard Chapter Constitution," delegates of Maryland and Delaware; "How to Rate Your Chapter," W. G. Ruegnitz of Portland; "Local Civic Responsibility," W. H. Scales of Indianapolis; "Chapter Bulletins and News Service," A. J. Capron of San Francisco; "How to Do Chapter Work," H. H. Allen of Baltimore; "Obtaining and Holding Members," Will Blair of Cleveland; "Publicity and Public Affairs," W. W. DeBard of Chicago; "Conducting Chapter Meetings," E. D. T. Myers of Richmond; "How to Make Officers Function," T. A. Dungan of Chicago; "How to Arouse and Sustain Membership In-

terest," A. N. Knowles of New York; "How to Assist National Headquarters in Collecting Dues," T. A. Dungan of Chicago; "The Sphere of Women in Chapter Activities," B. W. Matteson of Ogden.

Plans were made to have local chapters perform much the same functions as civic clubs, taking an active part in community welfare.

Resolutions were adopted at the last day's session, favoring the passage of the Smith-McNary reclamation bill, and telegrams to this effect were forwarded to national representatives.

A resolution favoring the enactment of an act by Congress empowering the President and Secretary of Labor to import unskilled labor to work in the Hawaiian Islands, was also passed. This resolution is proposed as a means of relief for project work in the islands retarded chiefly by the lack of unskilled labor.

A banquet and election of officers, on the evening of June 7th, brought the convention to a successful close.

The following officers were elected for the ensuing term:

A. N. Johnson, of Maryland, president; G. E. Taylor, of West Virginia, first vice-president; A. M. Knowles, of New York, second vice-president. These succeed H. O. Garman, president; A. N. Johnson, first vice-president, and A. S. Morris, second vice-president. C. E. Drayer, secretary, and Henry W. Clausen, treasurer, are not affected by the election, as they are selected by the board of directors and both have been in office for several years. B. W. Matteson, W. S. Boyle, W. M. Peyton and F. C. Shepherd are new members of the board of directors. Mr. Matteson is from Ogden, Utah, Mr. Boyle from Indiana, Mr. Peyton from North Carolina, Mr. Poole from New York and Mr. Shepherd from Boston.

The convention was highly successful from every standpoint. It was attended by about 1,000 delegates, representing a membership of 22,000 in 192 chapters and sixty-one clubs scattered throughout the United States.

The Mountain States Telephone and Telegraph Company, in a warning recently issued to all amateur radio operators, prohibits the use of telephone poles as aërials, because of the great danger from contact with both telephone and electric light wires.

Two Organizations Oppose Water and Power Amendment

The proposed \$500,000,000 Water and Power Amendment which is to be voted upon by the people of California in the November elections was the subject of two attacks during the past month. The California Bankers' Association meeting at Del Monte unanimously adopted resolutions condemning the measure, while the Commonwealth Club, meeting in San Francisco, opposed the measure by a vote of 101 to 7.

Previous to the adoption of the resolution by the bankers, various members of the association pointed out that the Non-Partisan League, which recently conducted such a disastrous experiment in North Dakota, is backing the proposed California measure. The resolution adopted by the body follows:

"On the ballot of the November, 1922, election there will be submitted to the people of California a proposed constitutional amendment erroneously designated as the 'Water and Power Act.'"

"It purports to establish a state policy of conservation, development and control of the waters of the state. Perusal of its provisions, however, discloses that its primary aim is to put the state into the business of manufacturing and distributing hydroelectric power."

"It proposes the creation of a board of five men, appointees of the government, in whom would be vested powers greater than those of all other boards in the state combined, and entirely without precedent in the history of this country."

"It proposes to issue state bonds in the sum of \$500,000,000, with which this board may carry out plans to acquire existing power systems and construct others. Palpably an experiment, the proposed measure if enacted would become a part of the organic law of our state and could not be altered in any way by the Legislature, but only by another vote of the people through the laborious and costly processes of the initiative."

"Careful consideration of the so-called act convinces thinking men that it should be defeated for reasons as follows:

"Its proposed \$500,000,000 bond issue would place a mortgage upon every acre of California land to one-eighth of its assessed valuation."

"It contains provisions which permit of pyramiding the state's debt and which therefore savor of wildcat financing."

"It permits unlimited increase in taxation at the behest of the proposed all-powerful board."

"It authorizes unjust and even tyrannical exercise of the right of eminent domain."

"It jeopardizes the value of millions of dollars in securities in which thousands of our citizens have invested."

"It would, because of the years necessary to carry its program through, and because its passage would necessarily halt all electrical development through private investment, inevitably bring about a period of business stagnation."

"It proposes to substitute state responsibility and risk for private responsibility and risk."

"It is not needed, as California has today the cheapest power in the world, and its power systems are operating efficiently and adequately under the absolute control of a public board, the Railroad Commission of the state of California."

"We declare our opposition to the so-called water and power act on the further ground that it is unsound, unnecessary and dangerous, and we pledge ourselves to exert every legitimate effort and influence to bring about its defeat at the November election."

The vote of the Commonwealth Club opposing the measure was taken following a debate participated in by Louis Bartlett, mayor of Berkeley, and William Kehoe, attorney, as proponents, and A. E. Chandler, attorney and former chairman of the California State Water Commission, and J. D. Galloway, consulting engineer, as opponents of the bill.

Utilization of power for pumping on irrigation projects in southern Idaho is about three weeks later this year than usual, on account of the late spring, according to reports from Malad.

COMING EVENTS

PACIFIC COAST DIVISION, AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS

Annual Meeting—Vancouver, B. C.—August 8-11, 1922

PACIFIC COAST DIVISION, NATIONAL ELECTRICAL SUPPLY JOBBERS' ASSOCIATION

Quarterly Meeting—Del Monte—August 3-5, 1922

CALIFORNIA STATE ASSOCIATION OF ELECTRICAL CONTRACTORS AND DEALERS

Annual Convention—Santa Cruz—August 17-19, 1922

Dexter S. Kimball, dean of the Cornell College of Engineering and president of the American Society of Mechanical Engineers, has just visited all of the principal cities of the West, explaining the mission of the engineer in modern civilization and his growing sphere in American government and industry. Dean Kimball, during his tour made an appeal for greater unity of



DEXTER S. KIMBALL

thought and effort between the engineers of the East and West. Through the Federated American Engineering Societies of which he is vice-president, the engineers of the nation are being welded into a single organization which is already playing a prominent part in the solution of political, economic and social questions. Dean Kimball's Pacific Coast trip was in the nature of a homecoming for he came to the Puget Sound district when a boy and served an apprenticeship in the machine shop of Pope and Talbot at Port Gamble. After leaving Port Gamble, Dean Kimball entered the employ of the Union Iron Works of San Francisco and was with that company during the building of the battleship Oregon. He is a graduate of Stanford University. During his stay in the West, Dean Kimball addressed engineering gatherings in Los Angeles, San Francisco, Portland, Spokane, Moscow, Seattle, Ogden, Salt Lake City, and Denver.

E. A. Wilcox has resigned his position as vice-president and sales manager of the Pittsburgh Electric Corporation and is located in Los Angeles, Cal., where he has established a manufacturer's agency, specializing in electrical and mechanical machinery and equipment. During the war Mr. Wilcox served overseas as captain in the U. S. Army, and previous to that time was manager of the Public Service Company of Oklahoma.

Warren C. Earle on June 1 became head of the consolidated offices of city engineer and street department, city of Pasadena. E. P. Dewey, formerly city engineer, and John Beyer, formerly superintendent of streets of Pasadena will remain with the city, the former in charge of sewage investigations and the latter as assistant street superintendent in charge of construction. Mr. Earle has held the position of consulting engineer to the city of San Diego since 1916, giving particular attention to water rights and the city's interest in utility developments generally.

Personals

Lewis A. McArthur, general manager, Pacific Power and Light Company, put on a show of lantern slides and lectures before 225 members of various electric bond and share company organizations while in Atlantic City at the convention of the National Electric Light Association, and has also exhibited these lantern slides in many of the towns served by the Pacific Power and Light Company along the Columbia River where they have met with unprecedented success.

Preston S. Arkwright, president of the Georgia Railway and Power Company of Atlanta, Ga., was one of the four principal speakers at the international convention of Rotary Clubs which was recently held in Los Angeles.

K. Tanaka, electrical engineer of the South Manchuria Railway Company, with headquarters at Darien, recently spent some time in Butte inspecting the electrified lines out of that city together with the substations in that vicinity. The company with which he is associated is planning to electrify 200 miles of its lines in Southern Manchuria, and he is inspecting various American railway systems that have been electrified before making a final report to his superiors.

M. W. Birkett, who has been acting general manager of the Washington Water Power Company since the resignation of W. E. Coman last December, has been elected to the post of general manager by the directors of the company. Mr. Birkett has been in the employ of the company for the past 14 years.

Albert H. Beckwith, electrical engineer with the Washington Water Power Company, has been promoted to the post of assistant superintendent of light and power, to take the position vacated by J. E. Royer who has been named assistant general manager of the company. Both Mr. Royer and Mr. Beckwith have been connected with the company for fifteen years.

Ralph H. Jewell has been appointed general counsel and assistant to the president of the Salt Lake and Utah Railroad Company. Mr. Jewell came to Salt Lake City from Washington, D. C., where he has been acting as attorney-examiner for the past year.

F. W. Gay of the William Cramp and Sons Ship and Engine Building Corporation of Philadelphia, who has been in San Francisco since March first in connection with the acquirement of the Pelton Water Wheel Company by the Cramp organization, has returned to New York City.

J. B. Lippincott, Los Angeles civil and consulting engineer, has been retained by the city of Phoenix, Arizona, for the Verde water supply system which is being contemplated for that city.

W. J. Laufenburg, Theo. Nollenberger and Walter Tripp, members of the electrical industry in Denver, attended the Shrine convention recently held in San Francisco.

Ely C. Hutchinson, vice-president and general manager of the Pelton Water Wheel Company, has returned to San Francisco after a month spent in New York and Philadelphia. This was Mr. Hutchinson's first trip East since his appointment to the vice-presidency of the company following its acquirement by the William Cramp and Sons Ship and Engine Building Company.

W. Jocelyn E. Dale, electrical and mechanical engineer formerly with the Compania Azucarera Elia of Havana, Cuba, is touring the state of Colorado at the present time. Mr. Dale, who has done extensive engineering work in India, China, Japan, Africa and South and Central America, is investigating the hydroelectric possibilities of Colorado.

George F. Cotterill, engineer and former mayor of Seattle, has been elected port commissioner of Seattle Port, succeeding Dr. W. T. Christensen, whose term expires. Mr. Cotterill was elected for a three-year term, and forms one of a board of three commissioners.

Guy W. Talbot, president, and Lewis A. McArthur, general manager, Pacific Power and Light Company with headquarters at Portland, Oregon, after a most successful visit in the East are again in their Portland headquarters. While East they attended the sessions of the National Electric Light Association at Atlantic City.

Franklin T. Griffith, president of the Portland Railway, Light and Power Company, has been elected to the second vice-presidency of the National Electric Light Association, and with the natural trend of events will extend the hospitality of Portland to that organization in 1925 as president. For two years Mr. Griffith served as chairman of the Water Power Development Committee of the N. E. L. A. and it was during his regime that the Federal Power Commission was formed. During the formation of this body he played a prominent part



FRANKLIN T. GRIFFITH

in its affairs and spent much time in Washington, D. C. The committee also took an active part in the determination of the policy under which the Federal Commission should operate and aided in the formulation of the rules which govern that body at the present time. Mr. Griffith has also been an active figure in the affairs of the Northwest Electric Light and Power Association.

K. E. Van Kuran of Los Angeles, C. E. Heise of San Francisco and W. D. MacDonald of Seattle, all district managers of the Westinghouse Electric and Manufacturing Company, are again at their Pacific Coast headquarters after attending a most successful meeting of the Westinghouse Jobber Agents Association in addition to attending the sessions of the National Electric Light Association at Atlantic City.

W. J. Myers, secretary of the United Electric Light and Power Company of New York, was in attendance at the Boise convention of the Northwest Electric Light and Power Association and later visited Portland and Seattle where he held informal meetings of the Accounting Committee of the N. E. L. A., of which he is a member.

Miles Steel, Pacific Coast manager of the Benjamin Electric Company with headquarters in San Francisco, is again back greeting friends after an absence of many months due to a serious nervous breakdown. Mr. Steel is looking well and men of the industry are most cordial and happy in their friendly greeting over his complete recovery.

W. H. DeWitt, Jr., general traffic manager of the Western Electric Company, Inc., with headquarters at Hawthorne, Illinois, is making a tour of the West.

Frank B. Jewett, internationally known telephone engineer and a western man, has been elected president of the American Institute of Electrical Engineers for the year beginning August 1. He was born in Pasadena, California, in 1879, and was graduated from Throop Polytechnic Institute, now the California Institute of Technology, in 1898. He obtained his Ph.D. degree from the University of Chicago and later was an instructor in electrical engineering and physics in the Massachusetts Institute of Technology. In 1912 Mr. Jewett became assistant chief engineer of the Western Electric Company and in 1916 chief engineer. He is



FRANK B. JEWETT

now vice-president of that company and his duties have been extended to include the supervision of all the manufacturing operations of that company in America together with the direction of the sales and distribution of the products. During the war he served as a Lieutenant-Colonel in the Signal Corps of the U. S. Army, and was the recipient of the Distinguished Service Medal.

Major-General Lansing H. Beach, chief of engineers of the United States War Department, recently spent some time in San Francisco in conjunction with a hearing before federal officials on the proposal of the San Francisco-Oakland Terminal Railways to build a union terminal in San Francisco Bay adjacent to Goat Island. General Beach is in charge of all river and harbor development work for the government as well as all fortifications. He was graduated from West Point in 1882, served as a captain in the Spanish-American War and became a member of the Mississippi River Commission in 1913. Since that time he has specialized in river and harbor work and was appointed chief of engineers in 1920.

J. C. Painter, who has spent the last two years in radio research work in the laboratories of the General Electric Company at Schenectady, has assumed charge of the radio department of the Capital Electric Company of Salt Lake City. Mr. Painter will direct his efforts toward the promotion of the wireless telephone in the intermountain region. He is a graduate of Virginia Polytechnic Institute at Blacksburg, Va., and has been connected with the General Electric Company for five years.

A. S. Kalenborn is now with the California Oregon Power Company in Medford, Ore., on engineering problems connected with the building of a hydroelectric plant unit, and the construction of a 116-mile transmission line to Springfield, Ore. Mr. Kalenborn recently returned from Peru where he was in charge of the hydroelectric department of the Cerro de Pasco Copper Corporation in the Andes Mountains near Lima.

George A. Hughes, president of the Edison Electric Appliance Co., Inc., with headquarters at Chicago, has been in attendance at the recent convention of the Northwest Light and Power Association at Boise, Idaho, and later visited Portland, San Francisco and Los Angeles.

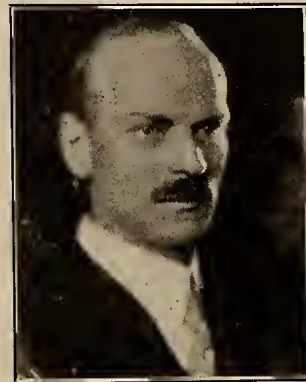
George F. Russell has been appointed superintendent of public utilities and Robert L. Proctor, superintendent of buildings, for Seattle, by Mayor E. J. Brown, who recently succeeded Hugh M. Caldwell as chief executive of Seattle. Mr. Russell succeeds Carl H. Reeves in the utilities department and Mr. Proctor succeeds James E. Blackwell. Mr. Russell has served in several city positions, including the city treasurer's office, and as postmaster of Seattle, to which position he was appointed in 1908. Mr. Proctor has served as president of the Central Labor Council.

Aubrey Drury, formerly associate editor of the Journal of Electricity and Western Industry but now conducting the Drury Publicity Service in San Francisco, is the author of a new book entitled "World Metric Standardization."

Harry Randall, Rocky Mountain territory manager of the General Electric Company, and one of his assistants, B. C. J. Wheatlake, are attending a convention of G-E representatives at Schenectady, N. Y.

M. H. Aylesworth, executive manager of the National Electric Light Association, is spending a short vacation in Colorado, having established his family in Estes Park for the summer.

John Mills, assistant personnel manager of the Western Electric Company, has recently completed a tour of Pacific Coast cities, during which he gave a series of enlightening lectures on the various phases of radio telephone development, particularly the vacuum tube. As a writer of technical books in connection with his work in radio telephonic research, Mr. Mills enjoys a



JOHN MILLS

national reputation. His lectures and informal talks have been received with unusual and enthusiastic appreciation in all sections of the West, which, in the minds of those closely connected with the electrical industry, is indicative of the popularity of radio at the present time.

T. E. Bibbins, president of the Pacific States Electric Company, is attending the annual meeting of the General Electric Company association members at Association Island on the St. Lawrence River. He will return the latter part of July.

Roy Worth, manager of the Seattle office of the Pacific States Electric Company, is a recent San Francisco visitor.

Obituary

Colonel Harvey D. Loveland, member of the California State Railroad Commission, and oldest public utility commissioner in the United States in the point of service, died in San Francisco recently after a protracted illness. Colonel Loveland had been a member of the California commission continuously since 1907. He was born in New York in 1853 and came West in 1887 to follow the practice of law. He became associated with the Pacific Coast Jobbers' and Manufacturers' Association and for six years acted as its president. He also served as president of the Transmississippi Commercial Congress. Colonel Loveland was a prominent Mason, having been past grand commander of the Knights Templar of California. Colonel Loveland devoted the best part of his life to the work of regulation of public utilities and was a national authority on the subject. His death is a distinct loss, both to the people of California and to the public utilities.

The Liberty Electric Company has been incorporated in Pueblo, Colorado, for the purpose of handling electrical appliances of all kinds. The Company, which has a capital stock of \$5,000, was incorporated by C. W. McNeill, R. C. Surface and R. A. McNeill.

The Laundryette Manufacturing Company, Cleveland, has issued a new folder "It Will Save Your Hands Too" which is ready for distribution to Laundryette dealers. The folder describes the various advantages of the company's product.

The General Electric Company, Schenectady, has just issued Bulletin No. 47526 describing type QC-3 quick-break lever switches up to 600 volts and 1000 amperes. The switches are made in either single, double, triple or four pole combinations for single or double throw.

The Condit Electrical Manufacturing Company, Boston, has perfected a new type O-1 oil circuit breaker. The construction of this breaker is notable for its extreme ruggedness and adaptability to outdoor service. It is furnished in automatic or non-automatic types as desired. The breakers can be furnished for any number of poles as they are of unit construction with individual tanks per pole. They are built for 15,000 or 25,000 volts, up to and including 600 amperes.

P. C. Wagner, formerly with the Goodyear Tire and Rubber Company, has taken over the sales promotion work for the Laundryette Manufacturing Company of Cleveland. Mr. Wagner was also at one time connected with the Industrial Association of Cleveland.

The Ajax Electric Specialty Company, St. Louis, states that results compiled following a national "direct-to-the-user" advertising campaign, show that the plural socket plug has gained to such an extent in popular favor that the demand for this type of specialty is four to one over the double socket type of plug.

The Majestic Electric Development Company, San Francisco, has just issued a new circular describing the new type combination waffle and pancake iron which has been added to the Majestic line. The grids of the iron are so arranged that they may be reversed cooking either a waffle or two pancakes. The new device is meeting with instant popularity.

The P. A. Geier Company, Cleveland, Manufacturers of Royal vacuum cleaners, has announced a contest for Royal salesmen during July and August with \$3300 in cash prizes. The company believes that the contest will be an effective means of stimulating sales during the summer months.

The Van Dyke Hardware and Manufacturing Company, Seattle, will immediately engage in the manufacture of radio sets, specializing on vacuum tube and rectifiers, capable of reception up to 1,500 miles. Heretofore, the plant has manufactured various metal novelties, and ship and builders' hardware. B. A. Engholm, who has had eight years experience in radio construction, and was formerly with the Northwest Radio Service Company, will have charge of construction of the outfits.

The M and H Electric Company, electrical engineers and contractors, has been established in Denver at 1535 Grant St.

Manufacturer, Dealer, and Jobber Activities

A. T. Maryon has organized the Manufacturers' Representative Company in San Francisco for the purpose of conducting intensive merchandising campaigns on various types of appliances. The company has a corps of sixty-five house-to-house salesmen operating in Northern California, merchandising America vacuum cleaners and Meadow-Lark washers. T. W. Smith and R. D. Smith are the sales managers.

The P. E. Chapman Electrical Works, St. Louis, announces a new armature testing equipment, the "Armeter," invented by P. E. Chapman. It is intended as a production instrument for making instantaneous commercial tests for electrical defects in armatures and bare commutators. Bulletin 11C has been issued describing the new device.

J. Wallace McKellar, formerly with the Newbery Electric Corporation, is now promoting the sale and distribution of portable lamps for the Moe-Bridges Company in the Pacific Coast territory. Mr. McKellar's headquarters are at the San Francisco factory branch.

The Roller-Smith Company, New York, manufacturers of electrical instruments, meters and circuit breakers, has just issued Bulletin No. 560 describing the newly perfected types "E" and "P" enclosed circuit breakers. The fully enclosed safety feature insures both safety and protection. Type "E" breakers are made only in the double pole, independent arm style. Type "P" is non-closable on overload.

W. E. Sprackling, president, and P. S. Klees, sales manager, of the Tubular Woven Fabric Company, Pawtucket, R. I., gave away a quantity of highly trained golf balls, known as the "Dura-ball," at the recent Hot Springs convention of the Electrical Supply Jobbers' Association. "Sprack" and "Pete," as they are known to their associates are contemplating a trip to the Pacific Coast in the near future and the Coast jobbers have expressed the hope that they bring a barrel of the trained golf balls with them.

The Roller-Smith Company, New York, has issued Bulletin No. 20 describing the Universal type radio telephone receivers just placed on the market. The receivers are made in two classes, type "A" with a resistance of 2700 ohms per pair and type "B" with a resistance of 2000 ohms per pair.

The Westinghouse Electric and Manufacturing Company, East Pittsburgh, has developed a new application of the space or "strap-on" heater adapted to tanks where the temperature required does not exceed 300 degrees F. The heater has been designed for use in homes and small shops.

The NePage McKenny Company, San Francisco contractor-dealers, has secured a contract for the wiring of the seven-story Federal Reserve Bank building which is being erected in that city. The contract, which was closed for \$93,553 is one of the largest to be let for this type of work for some time.

Albert Sechrist, head of the manufacturing company bearing that name in Denver, is making a tour of the Pacific Coast in the interests of the electric pressure cooker which has been patented and is being manufactured by his company.

Pass and Seymour, Inc., Solvay, N. Y., has recently placed on the market a new all metal "BR" base to replace the old style flat-back wall receptacle. The new base is adaptable to all forms of concealed outlet work and is provided with a complete set of adapters.

The Reynolds Radio Company of Denver has established a new store at 1534 Glenarm Place which will be one of the largest and most complete radio specialty shops in the West when completed.

The Ward-Leonard Electric Company, of Mount Vernon, manufacturers of Vitrohm and Ribohm resistors and electrical control apparatus, announce the appointment of Joseph E. Perkins, 113 East Franklin Street, Baltimore, Md., as their selling agent for Maryland, Virginia, and that part of Pennsylvania identified as the Susquehanna Valley, as far north as Harrisburg.

The Cincinnati Electrical Tool Company has established representation in the Rocky Mountain territory through the Mountain States Machinery Co.

The Fobes Supply Company at Portland has moved into new and spacious quarters at Eighth and Davis streets. F. N. Averill is manager of the Portland branch of the company.

The Commercial Switch Board Company of Denver has started a distribution campaign to sell its products throughout the Middle West.

The American Motorsign Company, of Cincinnati, has established representation in the mountain territory through L. C. Murphy with headquarters in Denver.



ON THE GREEN IN TWO

The gentleman who took this picture vows that Ray Turnbull, Northwest manager for the Edison Electric Appliance Company, was on the green in two as a result of his shot, making a birdie for a par four hole. "Cow pasture pool" is one of Mr. Turnbull's favorite pastimes. Not being an expert, we might hazard a guess that he made 50 yards on the shot, landing in a ditch in the lumber orchard just beyond the fence in the background. Anyway that is what we would have done.

Business Outlook in Western Market Centers

Reflecting the Trend of Community Thought on Conditions and Events Affecting Business and Industrial Activities Throughout the West

Compiled and edited for the Journal of Electricity and Western Industry by correspondents in all principal Western cities.

SAN FRANCISCO

Business in San Francisco is on a continued upward grade. Wholesale houses report especially satisfactory conditions, while the retail trade reports an increase both in volume and value of business over sales for the same period in 1921. Building operations are extremely active and collections are reported good in all quarters.

The past two weeks period has been marked by a succession of conventions, notable among them the gathering of 200,000 Shriners, which have had some effect in the stimulation of retail trade. The decision of the United States Supreme Court in dissolving the merger between the Southern Pacific and Central Pacific is regarded as a severe blow to this district, but it is hoped that the Interstate Commerce Commission will authorize a reconsolidation under its powers granted by the Esch-Cummins Act of 1920.

Weather conditions have been favorable for crops in tributary country, for the most part, although a cold spring has delayed harvests. Practically all deciduous fruit crops, with the exception of prunes, show a marked increase over the 1921 crop, and prunes are in a better condition than was expected following the early frosts.

PORTLAND

Business conditions are fairly good and the prospects are encouraging. The volume of business compares favorably with that for the corresponding period last year as reflected by the May bank clearings which were \$126,209,541, or over eleven million dollars greater than for May, 1921. New business in the lumber industry continues to exceed production. Lumber production for the week ending June 10th was 9 per cent above normal, while new business was 7 per cent above production. Unemployment showed a marked decrease during the month of May. Increased building activity, road construction, farm work, and public works have absorbed virtually all surplus labor. All branches of the electrical industry are finding business improving steadily. Utilities in this section are spending more money on extensions and improvements than for many years past. The radio craze seems to be subsiding somewhat and the peak has probably been passed.

SEATTLE

During the first weeks in June in Seattle contracts were awarded for buildings involving two large churches, two apartment houses, a \$400,000 office building, and a number of smaller business structures, totaling in cost more

than \$1,000,000. This figure does not include the number of high-class residences, ranging in price from \$8,000 to \$25,000, which were started during the first half of the month.

Electrical and material dealers report a very encouraging improvement in their lines of business, with prospects bright for the remainder of the summer months.

Lumber has shown an increase in price of from \$1 to \$3 per thousand, indicating a firm market in all lines of lumber products. To care for increasing demand, numerous mills in the Puget Sound section have started or will start, a night shift.

Reports of an increase of five cents per hour in the wages of lumber mill employes, agreed upon by employers and employes in conferences in Bellingham, Seattle and Tacoma, under the auspices of the Loyal Legion of Loggers and Lumbermen, have been confirmed.

SPOKANE

Trade conditions are generally quiet. There is little movement in real estate but there continues to be a large amount of home building in all parts of the city. The large proportions reached by this movement is largely responsible for the difficulty in moving older houses. The next few weeks will determine the character of the wheat crop. Reports about this differ widely. However, the best informed bankers do not now expect it to be the bumper crop that at one time seemed likely.

The lumber business is continuing its phenomenal spurt of the last two months. The best evidence of this lies in the fact that all the mills of the Inland Empire are running, some two shifts, and that orders are exceeding the production, with a wage advance of 5 cents an hour ordered Monday, June 12, effective June 16 in all the mills in which the Loyal Legion of Loggers and Lumbermen is organized. As these 17 mills control 70% of the output, it is expected that the 33 smaller mills will fall in line with the wage increase.

SALT LAKE CITY

There has been no material change in business conditions in the intermountain section. The gradual improvement is continuing, and the general outlook is very satisfactory.

The comparatively large army of unemployed which existed during the winter has now been reduced to a negligible quantity, due to the activity on the farms, in the mines and road-building and other public works.

Building activity in Salt Lake City, Ogden and other of the larger towns continues at a satisfactory pace, which means increased business for the electrical men, the lumber and hardware

dealers and other classes of business less directly concerned, all of which benefit to some extent.

Prices for copper and lead have improved somewhat, which is a very satisfactory situation for the mining industry. In fact, the mining industry is "getting on its feet" in a gratifying manner. This condition, of course, means much to this section.

LOS ANGELES

Los Angeles bank clearings for the week ending June 15 show a 21 per cent increase over the same period last year and an even greater improvement over 1920 conditions. In building permits for May, Los Angeles ranked fourth in the United States, with a record of \$9,327,504, or almost \$2,000,000 more than its phenomenal record of a year ago, when it ranked second only to New York.

Favorable conditions are reported by both wholesale and retail trade. Dry goods and department stores report an increase in sales for the month of May from 10 to 27 per cent over those of last year. Cotton goods have gone up in price and a further increase is expected. The cotton crop in the Imperial Valley is reported to be 84 per cent of normal as compared with 75 per cent in 1921.

Damage from the heavy frost of the early spring season is not so serious as was expected. Field crops are in better condition than last year and citrus fruits, which were especially damaged, will nevertheless show a crop which will amount to about 73 per cent of that of 1921.

DENVER

The building boom is now reaching down town office buildings, hotel buildings, and industrial work such as railroad shops, factory additions, warehouse facilities, and even new viaducts. With a shortage of skilled labor on residence work, considerable difficulty is expected in securing craftsmen when the bigger jobs get under way.

Every week gives the business outlook a more healthy complexion. Bankers are talking optimism and it is the general belief that if a good harvest can be had this fall the farmers' finances will be given a boost which will be felt in the larger cities of this district.

The post office department reports increased business for June while the local stockyards established a new record in the receipt of cattle and sheep during the month. In trade lines sales are meeting with less resistance although in the electrical appliance business supreme efforts are being exerted to make it "come back." Wiring supplies and fixtures, of course, are moving quite freely.

Construction News and Industrial Developments

Suggesting to the Engineer, Contractor, Manufacturer, Dealer, Agent and
All Business Men Opportunities for New Business

Bridges

Ida., Bonners Ferry—A contract has been let by the county commissioners for a steel bridge across the Moyle river just above the site of the city electric power plant, to the Illinois Steel Bridge Co. The bridge will cost \$29,774.

Wash., Seattle—Contract for erection of the West Spokane Street bridge, a double-leaf bascule type, 288 ft. long, with two 140-ft. fixed span approaches, has been let by the city council of Seattle to J. A. McEachern Company, Inc., on their bid of \$264,497. The structure will span the Duwamish River.

Buildings (Industrial)

Cal., Los Angeles—The Westinghouse Electric Company in connection with the 6-story warehouse now under construction, has awarded the contract for complete plumbing and fire-sprinkler system to the Thomas Haverty Company of this city at a cost of \$22,000. Noerenberg and Johnson, architects.

Ore., Portland—The Concrete Pipe Company, with offices in the Board of Trade Building, has planned a two-story factory as an addition to their plant on Page street, between Albina Ave. and Kerby St. It will be 120 x 140 feet, costing \$20,000.

Ore., Portland—The Brown Shipley Co., manufacturers of fruit juice products, who for several years past have operated a plant at Sheridan, Ore., will soon erect a new plant in Portland, to cost about \$150,000.

Ore., Portland—The Willamette Iron & Steel Works are making two additions to their plant, which will cost about \$20,000. One is the extension of a material dock and the other a shear leg dock.

Wash., Spokane—Shops—Spokane is named as headquarters for a \$100,000 corporation to be known as the Cranston Wire Company, which will enlarge its present shops and facilities for making an automatic wire binding device used on wooden fruit crates.

Wash., Seattle—The Washington Mattress Company, here, plans the erection of a three-story and basement fireproof addition to its manufacturing plant, to cost \$60,000, and to adjoin the present plant. Structure will be 88 x 120 feet, of concrete and steel construction.

Wash., Seattle—The Associated Oil Company, Henry Building, A. J. McNeil, construction engineer, plans the erection of a large steel-frame, oil storage warehouse at the Harbor Island plant. Structure will be 100 x 32 feet in size. A heavy timbered garage, 80 x 32, feet in size, will house the seven-ton trucks of the company. An office structure 30 x 30 feet will also be built.

Wash., Yakima—The Winthrop Orchards Company, here, plans to more than double the capacity of its air-cooled storage plant, according to H. E. Waterbury, manager. New construction will increase the capacity of the plant from 45,000 to 115,000 boxes.

Wash., Wenatchee—Moorhead and Farrell of this city, who recently constructed a large car-icing and cold storage plant at Hillyard, near Spokane, plan the erection in Wenatchee of a plant of the same kind to cost \$250,000. The plant will have a capacity of 1,000 cars of fruit.

Wash., Spokane—The Harold Furnace Mfg. Company have announced plans for the construction of a new, modern furnace factory at Sprague and Thor streets. Building operations will commence July 1. A. P. Harold is president of the concern.

Wash., Tacoma—The Marine Equipment Company have purchased an \$11,000 factory site for the purpose of manufacturing patented ship furniture. Officials of the company are now drawing plans for a \$275,000 factory, construction on which will start about August 1.

Wash., Seattle—Northwestern headquarters of the Pittsburgh Plate Glass Company, a \$60,000, 000 eastern corporation, will be established in Seattle following the immediate erection of a warehouse on Westlake Ave. North between Thomas and Harrison. Schack, Young and Myers, Seattle architects, are drawing plans for the structure.

Buildings (Miscellaneous)

Cal., Fresno—School—A bond issue of \$30,000 has been voted by the Madera district for the erection of a grammar school on the north side, site for which has not yet been purchased, and the erection of a manual training department and domestic science building on the site of the present Lincoln grammar school.

Cal., San Francisco—Apartment—Plans for a ten-story and basement, class A apartment building at the southwest corner of Greenwich and Hyde Streets are being prepared by C. A. Meussdorffer, architect. O. B. Martin is the owner. Cost of the building is estimated at \$200,000.

Cal., Stockton—Fair Buildings—Plans for the 1922 unit of improvements at the County Fair grounds, to be completed in September, call for the expenditure of \$58,000. John L. Hefferman and W. L. Douglas, of the County Fair Association, and W. J. Wright, architect, have submitted plans for the improvements to the Board of Supervisors.

Cal., San Francisco—Telephone Offices—Additions and alterations for the main offices of the Pacific Telephone and Telegraph Co., 333 Grant Ave., to cost approximately \$48,000 will be made in the near future. Macdonald and Kahn are the contractors.

Cal., Pomona—Theater—\$180,000 will be expended in a theater building for the West Coast Theaters Company of Los Angeles, if the present plans of local capitalists are successful. The structure is to be located on Third St.

Cal., Napa—School—The board of trustees of the Napa high school district awarded the contract for building the new high school to Larson and Siegrist, whose bid for the general contract was \$262,777.

Cal., Los Angeles—Offices—An 8-story loft and office building will be erected on Hill St. between 6th and 7th by the Starr Piano Company. Stanton and Reed, architects, estimate the cost at \$250,000 for a steel frame structure with terra cotta exterior and trim of face brick.

Cal., Bakersfield—Apartment-Store — A 48-room apartment and store building will be erected by McMahon Bros. at the corner of 18th and H Sts., the stores to be occupied by themselves with a furniture establishment. Cost estimated at \$100,000.

Cal., Lodi—School—Three Sacramento contracting firms were successful in securing awards for the erection of the grammar school to be built on Garfield Street in the Barnhart Tract. Thomas C. Keating was awarded the contract for masonry and carpentry, Thomas K. Scollan and Company, painting, Latourette-Fical Company, mechanical equipment. The total bid for construction of the building was \$76,280.

Cal., San Francisco—Apartments—A four-story and basement reinforced concrete apartment building will be erected on the west side of Leavenworth, north of Turk, by Carl F. Ernst, owner. E. H. Danke is the architect. Estimated cost, \$45,000.

Cal., San Francisco—Post Office—Authorization has been received by city postal inspector Wm. I. Madeira from the department at Washington for the enlargement and improvement of the ferry post office, the installation of modern mechanism for its work and modern accommodations for the workers. A new station in the Richmond district was recently authorized and a new postal station on Geary Street, between 18th and 24th Avenues, is contemplated.

Cal., Denver—Creamery—The Beatrice Creamery Co. will erect a three-story addition to its plant at a cost of \$30,000. It is understood that this added space is necessary for the handling of its ice business, which will later be supplemented by an ice cream department.

Cal., Denver—Shops—The first contract for construction work on the new Burlington shops which will cost \$2,000,000 has been let to the Stearns-Rogers Engineering Company of this city, and provides for the installation of water supply and sewage system, also for the preparation of the grounds.

Cal., Greeley—Armory—Contracts have been let for the construction of an Armory to cost \$45,000.

Cal., Denver—Bank—Arrangements have been completed for the construction of a new Federal Reserve Bank building in this city at 17th and Arapahoe Streets instead of at 18th and Curtiss Streets, and present plans provide for the immediate expenditure of \$250,000.

Cal., Denver—School—The school board has authorized a \$70,000 addition to the Myrtle Hill grammar school of this city.

Cal., Denver—Hotel—A six-story hotel building to cost \$300,000 will be built shortly at 7th and Wazee Street by the Cyrus W. Fisher Real Estate Co.

Cal., Denver—Offices—O. D. Cass of the Bishop-Cass Investment Company has announced perfected plans for a twelve-story office building at an estimated cost of \$800,000.

Cal., Denver—Apartments—H. K. Evans, of the Denver Mortgage and Realty Company, has announced that his company is financing a twelve-story apartment hotel which will be completely electrified.

Cal., Grand Junction—Theater—Winterburn and Lumsden are working on the plans of the new Avalon theater which will shortly be built at a cost in excess of \$100,000.

Idaho, Jerome—Hospital—Plans are being discussed by the business men of this city for the erection of a hospital, the cost of which will be about \$40,000. R. E. Shepard is in charge of the project.

Ida., Boise—Cold Storage Plant—The Boise Cold Storage Company plans the erection of an ice storage plant here where machinery for the manufacture of ice will be installed later.

Idaho, Caldwell—Lodge Building—Plans for a new lodge building for the Odd Fellows lodge have been approved by the members of the lodge and bids will be called for soon. The building is to be of stone and brick with stone trimmings.

Idaho, Boise—Hospitals—Bids have been received by the State Tuberculosis Hospital commission for the construction of hospitals at Payette and Sandpoint, Idaho. The bids for the two buildings range from \$50,000 to \$75,000.

Idaho, Caldwell—Lodge—Construction work on the proposed I. O. O. F. temple here will begin about July 15, according to officers of the lodge. The cost of the building will be about \$50,000.

N. M., Albuquerque—School—A. S. Hall and Company has been awarded contract for the erection of Junior High School No. 1, to be erected at Washington Park, also the grade school to be erected at Trumbull Ave. and High Street.

Ore., Portland—Creamery—Permits have been issued to the Riverview Dairy for the erection of three new buildings in the city of Portland, which will cost about \$15,000.

Ore., Portland—Lodge—Permit has been issued for the erection of a Masonic lodge building at 1127 Commercial St., to cost about \$40,000.

Ore., Portland—Columbarium—One of the most richly finished columbariums in America will be erected immediately on the grounds of the Portland crematorium at East 14th and Bybee streets. The building will be two stories in height and of reinforced concrete construction and will cost between \$45,000 and \$50,000. Plans were prepared by Lawrence & Holford, architects, and construction work is in charge of James Quinn.

Ore., Oregon City—City Hall—Bids are being received by the city clerk of this city for the erection of a new city hall which will be four-stories high and cost about \$35,000. The new building will accommodate the fire department, jail, auditorium and city offices.

Ore., Portland—Apartments—H. Gordon has prepared plans for a three-story apartment house to be built on Lucretia Court between Washington and Everett streets for the Stark Street Investment Co. The building will be 38 x 85 feet, three stories, costing \$50,000.

Ore., Roseburg—Apartments—A modern apartment house to cost \$125,000 is being built by George Kohlhausen, a local merchant. A \$25,000 lodge hall and garage combined is also under construction.

Ore., Prineville—School—A \$30,000 school house is being constructed here by E. J. Barrett, former contractor of Portland.

Ore., Eugene—Hospital—Bids have been opened for the erection of a new hospital here. E. W. Drew of Eugene was the low bidder at \$55,100. Plans were prepared by Architect E. E. McClaran of Portland.

Ore., Wallowa—School—A new high school to cost about \$50,000 will be built here to replace

Ore., Portland—Garage—Work has been the one destroyed by fire recently.

started on the erection of a six-story garage building on the ruins of the old Meier & Frank Company's warehouse at Broadway and Taylor streets. The first floor of the building will be devoted to stores and the remainder will be used for gaarge purposes by the large department store firm. The construction work will cost about \$60,000. Plans were prepared by Sutton & Whitney.

Ore., Portland—Bank—The property at the northeast corner of Sixth and Stark streets has been purchased by the Bank of California and will be used as the site of a new home for the bank, according to announcement. The building will be erected in 1925, on expiration of the lease which the bank has on its present quarters. The price paid for the property was said to be in the neighborhood of \$225,000.

Ore., Portland—Hotel—A permit has been issued to Zanello Bros. to erect a two-story building for the Salvation Army Corporation at 6th and Burnside streets. It will be of ordinary mill construction and will cost about \$30,000.

Ore., Portland—Additions—A. E. Doyle, architect in the Worcester Building, has been commissioned by the Fleishacker Bros. of San Francisco, owners of the Pittock block, to prepare plans for six additional stories to that building, which occupies the entire block at Washington, Stark, West Park and 10th streets. The north half of the building is now but two stories high and the additional stories to be added to that part of the building will make the entire structure eight stories in height. The estimated cost of the improvement is placed at \$500,000. Plans will be ready for figuring in from 60 to 90 days.

Utah, Salt Lake City—Bank—George W. Kellham, San Francisco architect, has been retained to design and supervise the construction of the new building which will house the merged Continental National Bank and the National Bank of the Republic, at the southwest corner of Second South and Main Streets. With Mr. Kellham will be associated a Salt Lake City architect of his selection.

Utah, Vernal—Federal Building—Plans have just been approved by the Government for the erection of a federal building at Vernal.

Wash., Seattle—Annex—The Metropolitan Building Company has awarded a contract approximating \$400,000 to Grant Smith & Company, contractors, which calls for the construction of the Stuart building annex, on the corner of 5th Ave. and University St. Construction will start July 1. When the building is completed the entire block bounded by 4th and 5th avenues and University and Union streets, which is directly adjacent to the site of Seattle's proposed \$2,500,000 hotel, will be taken up by the Stuart Henry and White buildings and their two annexes.

Wash., Tacoma—Lodge—The Masonic lodge announces the completion of tentative plans and purchase of perant site for a proposed Masonic Temple to cost \$450,000. Col. B. W. Coiner, Tacoma, is chairman of the building committee, and as soon as finance plans are formally approved by the various Masonic lodges of the city, construction will commence. Building is to be irregular in size, 180 x 190 ft., and will be equipped with a huge auditorium, to be used as a civic center, and the big roof garden proposed will be glassed in.

Wash., Tacoma—Hospital—Word has been received in Tacoma that plans for the proposed \$1,500,000 Veterans' Hospital to be built at Camp Lewis, near Tacoma, have been completed in Washington, and will be submitted to Col. C. B. Forbes, director of the Veterans Bureau, for his approval. The new hospital will accommodate 500 patients, and it is expected that actual construction will start within two months.

Wash., Everett—School—School District No. 24 is now receiving bids for erection of an addition to the present Garfield School in Everett, from plans prepared by Baker, Vogel and Evans, Pacific Block, Seattle. The structure will be 124 x 65 ft., three stories in height, containing 12 class rooms and a community hall with seating capacity of 525.

Wash., Seattle—Office—Contract for the construction of the proposed Stuart Building Annex at a cost of \$400,000 has been let by the Metropolitan Building Company to Grant, Smith & Company, contractors, Seattle. Construction work on the 5-story structure will begin July 1. Building will be 175 x 132 ft. in size.

Wash., Seattle—Apartment—The Ideal Investment Company, Alaska Building, has had plans completed for the erection of a four-story masonry apartment building at 109 John Street, to cost \$50,000. The building will contain 50 two and three-room apartments, and will be 62 x 103 ft. in size.

Wash., Wenatchee—Courthouse—Plans for the proposed Chelan county courthouse are now under preparation by Architects Morrison Stimson & Company of Spokane. The structure will cost \$350,000, and will be four stories, with basement, 80 x 140 ft. in size. Building will be of reinforced concrete, fireproof throughout.

Wash., Tacoma—Mill—The milling plant of the Peterman Manufacturing Company, which was damaged to the extent of \$180,000 by fire recently, will be rebuilt immediately, according to T. A. Peterman, president. The fire destroyed the new electrically equipped mill and practically all of the stock of the concern.

Wash., Seattle—Apartments—Stoddard & Son, architects and engineers, Lyon Building, have been commissioned to prepare plans for a three-story and basement apartment for Henry Schuett, Seattle, to cost \$50,000. Large garage for use of tenants will also be built. Structure will be located on Aloha and Prospect streets.

Wash., Seattle—Club—Contract for the proposed club building for the Women's University Club, to cost \$120,000, has been let to Rounds-Clist Company, Walker Building.

Wash., Everett—School—Baker, Vogel & Evans, architects, Pacific Block, Seattle, are preparing plans for a three-story addition to the Garfield Grade School, to cost \$75,000. Structure will be 124 x 65 ft. of masonry and frame construction, containing 12 classrooms and large community hall and auditorium.

Wash., Seattle—Apartment—The Warrack Construction Company has the general contract for the erection of the proposed three-story apartment house at 16th Avenue North and Republican Street, at a cost of \$65,000.

Wash., Olympia—Bank—Doyle & Merriam, architects, Seattle, have the plans for the proposed Capital National Bank Building about 75 per cent completed, and a call for bids will be issued within 30 days. Structure will be two stories high, 60 x 120 ft. in size, fireproof throughout.

Wash., Seattle—Apartment—Architect John A. Cruetzer, Leary Building, has completed plans for the proposed six-story, \$210,000 apartment building to be erected at East Howell and Belmont streets for L. L. Trouthon. Building will be 100 x 150 ft., containing 96 two and three-room apartments.

Wash., Seattle—Mortuary—E. R. Butterworth & Sons have awarded contract for their proposed mortuary, apartment building and garage, to Arveson & Lidral, Hodge Building. The structure will be 120 x 110 ft., three stories high, and will cost \$100,000.

Wash., Seattle—Garage—At a cost of approximately \$100,000, the Arena, covering an entire half block on University and Seneca streets, is to be remodeled into one of the largest garages in the West. The Metropolitan Building Company, owners, will install two floors in the present structure and strengthen the building walls to carry three more stories, to be added later. The floors to be installed will be reached by concrete runways and structure will be made fireproof throughout.

Wash., Seattle—Apartment—A Class A apartment house, to cost \$150,000, and containing 52 modern two and three-room apartments, will be built at once for the Charligate Apartment Company from plans prepared by Architect E. T. Osborne, 325 Leary Building. Contractor J. B. Murphy, Arcade Building, has the general contract.

Wash., Seattle—School—St. Edwards Parish will construct a new school building in Hillman City, at a cost of \$65,000. Plans are under preparation by Architects Lundberg & Mahon, Seattle, and provide for a structure containing 11 classrooms, beside assembly hall, etc.

Wash., Puyallup—Hospital—Plans for a combination hospital and dormitory building to be built at the State Masonic Home here have been completed by Architect Andrew C. P. Willatzen, Walker Building, Seattle. Structure will cost \$75,000, and in addition a central heating plant and an addition to the present administration building will be erected during the summer. The hospital will be a three-story building, 95x40 ft. in size.

Wash., Tacoma — Hospital —Establishment within a year of a \$750,000 Federal hospital at Camp Lewis is planned by the Government. The institution will be a Neuro-Psychiatric hospital, having a capacity of 250 patients. The hospital is to be constructed by the end of 1923, under the \$17,000,000 hospitalization program enacted by Congress, and supervised by the Veterans' Bureau.

Wash., Seattle—Logging Camp—Rounds-Clist Company, general contractors, has been awarded contract for the construction of a logging camp at Port Gamble for the Puget Mill Company. The contract involves the construction of numerous camp buildings, all of mill construction, including dining hall, bunkhouses, superintendent and foremen's residences, warehouse, engine house, machine shop, coal bunkers, etc.

Dams

Ariz., Phoenix—A floating dam will be constructed across the Gila River at the head of the present San Tan canal, according to the plans of the U. S. Indian Service. It will be necessary to include provisions for roadway, and siphon flume as an integral part of the dam for its entire length of 1,200 ft. Estimated cost is given as \$400,000, including approaches.

Highways

Ariz., Phoenix—Expenditure of \$700,000 for six highways has been recommended by the Secretary of Agriculture, part of the funds being available from previous bond issues. About 133 miles of roads are included in the list as submitted.

Ariz., Phoenix—Twohy Bros. were awarded the contract for state highway between Mesa city limits and Eastern canal at a figure of \$108,093 for the 4 miles. This is part of the Apache Trail highway system.

Cal., Sacramento—Three road contracts, two in Kern county and one in Tulare county, have been awarded by the State Highway Commission. The contracts awarded are: Kern county, 17.8 miles bituminized macadam, between Junction pumping station and Hart, awarded to Kaiser Paving Company of Oakland on bid of \$380,322. Kern county, resurfacing approximately eleven miles on main highway, awarded to Federal Construction Company of San Francisco on bid of \$59,466. Tulare county, 5.8 miles of grading between Three Rivers and Sequoia National Park, awarded to Nevada Construction Company of Fallon, Nev., on bid of \$121,173.90.

Cal., Merced—California Construction Company submitted the low bid and was awarded

the contract for the 22.5 miles of highways in the Livingston-Atwater section. The contract price is given as \$263,900 by County Engineer McSwain.

Cal., Santa Barbara—Early in July the State Highway Commission will receive bids for the highway between Los Chiqueros Creek and Llagas, a distance of 11 miles. Also 8.8 miles of new work in Orange county between San Juan Creek and east boundary of county.

Cal., San Bernardino—C. H. Sweeter, district engineer for the Bureau of Public Roads, Department of Agriculture, with offices in San Francisco, has taken bids on the road work to be undertaken in the Angeles National Forest of San Bernardino county and known as Big Bear Valley Road. The project involves 10.4 miles of highway and includes all culvert, embankment work, reinforced concrete bridges and grading.

D. C., Washington —Funds recently made available for highway construction work in Alaska, will provide for the building of 55 miles of highway in the territory. Of the 9 projects approved by the Secretary of Agriculture all but two are in the first judicial district, and in the Tongas National Forest; the remaining two projects are located in the third judicial district, and in the Chugah National Forest. The sum of \$184,000 will be expended in the construction of 7½ miles of highway between Ketchikan and Wards Cove. Of this amount, \$35,000 will be appropriated by the territory. Three miles of road will be constructed between Petersburg and Scow Bay at a cost of \$44,000; a section of the Glacier Highway between Auk Bay and Eagle River will cost \$230,000; 11 miles between Forest Boundary and Kanai Lake will cost \$157,000; between Cordova and Byak Lake, 6 miles will be built at a cost of \$122,600, and a plank walk 12 feet wide between Yakutat and the cannery will be built at a cost of \$10,000. The Bureau of Public Roads will supervise the construction.

Ida., McCammon—The state highway bureau has closed an agreement with the Oregon Short Line Railroad Company for the construction of a subway road under the company's tracks on the main line just west of McCammon. The subway will eliminate one of the most dangerous grade crossings in the state. It will cost approximately \$24,000, one-third of which will be borne by the railroad company. The remaining two-thirds will be equally divided between the state and county.

Ore., Grants Pass—A 500-ft. tunnel to cut off two miles of 5 per cent grade at the top of Smith River pass is proposed by the Bureau of Public Roads of the department of agriculture. The tunnel will cost about \$75,000. The bureau intends to spend \$600,000 this year in construction work from the Oregon boundary south.

Utah, Spanish Fork—The contract for paving the 6.6-mile road from Spanish Fork to Payson via Benjamin has been awarded by the county commission to Gibbons and Reed of Salt Lake City at a cost of \$150,000. The paving will be a 4½-in. black base with a 1½-in. bitulithic top.

Wash., Tacoma—Contract for clearing, grading and graveling 5.5 miles of the Gig Harbor-Longbranch road has been let to Frank Morgan, Everett, on his bid of \$43,386.73, by Pierce County Commissioners. Five bids were submitted. Engineer E. A. White's estimate was 47,-361.68.

Wash., Tacoma—Pierce County Commissioners have awarded to Frank Morgan of Buckley, contract for improving 6.2 miles of the Gig Harbor-Longbranch Highway, on bid of \$42,-000. Contract for paving 1.94 miles of the same highway was let to Sweeney, Holt and

Keating of Tacoma, on their bid of \$47,666. The latter job involves the laying of 19,178 sq. yd. of concrete paving, 7½ in. thick. The road will be 18 ft. wide.

Wash., Chehalis—Contract for improvement by grading and surfacing of Permanent Highway No. 9, Lewis county, has been let to George A. Banderet of Bryn Mawr, on his bid of \$34,-899.90. Engineer's estimate was \$35,743.18.

Wash., Aberdeen—State Highway Commission has awarded to Herrion and Stewart, Aberdeen, on their bid of \$88,595.50, contract to grade, clear, drain and gravel 5.57 miles of the Olympic Highway from Prairie Creek to Lunch Creek in Grays Harbor county.

Wash., Tacoma—A third contract for improvement of the Gig Harbor-Longbranch road in Pierce county has been let to Holz, Sweeney and Keating of Tacoma, who bid \$31,369 for clearing, grading and graveling 5.5 miles of the highway. Bids for the last stretch of about 4 miles of the road will be called for in about three weeks.

Wash., Yakima—Ten bids were recently submitted to the Yakima County Commissioners for grading and graveling of 11 miles of the Summitview-Tieton-Cowiche Road in Yakima county, the lowest being that the Sloan Construction Company, Spokane, who bid \$61,108.40. A feature of the bidding was the fact that only one of the ten bidders exceeded the engineer's estimate of \$81,360, while the low bid was more than \$20,000 lower than the estimate.

Wash., Goldendale—With the announcement that \$575,000 of National Forest highway funds have been made available for highway construction in Washington, the long projected White Salmon road, between Husum and Trout Lake in Klickitat county, is assured. The road will cost \$150,000, Klickitat county paying \$100,000 of this sum. The Hughes-Orient road on the Inland Empire Highway to cost \$100,000, will also be built this summer.

Irrigation Projects

Ariz., Phoenix—Engineering-Construction Corporation of Los Angeles has been awarded contract for construction of irrigation works for the Auxiliary Eastern Canal irrigation district which proposes to reclaim 41,000 acres of land about 25 miles southeast of Phoenix—cost \$2,000,000, as announced by district directors. Waters of Salt and Verde rivers will be diverted at granite reef into canals of the Salt River Valley Water Users' Association, to be conveyed 5 miles to pumping plant, consisting of four direct connected, electrically operated, 36-in. centrifugal pumps delivering water into 48-in. reinforced concrete pipe. Plans call for concrete lining of canal 21 miles long, with steel headgates and checks; bridges will be of timber, except at Apache Trail crossing, which will be reinforced concrete. There will be 65 steel cased wells (31 already drilled by private owners), all wells to be electrically operated and provided with pumps. Plans are to start construction at once. Harry L. Chandler, Mesa, is president of the district; Frank H. Parker, Phoenix, secretary.

Cal., El Centro—The Imperial Irrigation District carried water bond issue of \$7,500,000, \$5,000,000 of which will be used for buying up and consolidating various mutual water companies, balance to be used for construction of drainage system.

Cal., Selma—Land owners of the Consolidated irrigation district have voted \$850,000 in bonds for purchase and repair of the Consolidated Canal Company's system. Of this sum \$775,000 will be used for the purchase of the canal system before July 1, and the remaining \$75,000 will be used for improvements and repair work.

Cal., Redding—Supervisors have taken the last step toward forming the Fall River Irrigation District of 13,207 acres. An election will be held July 1st to vote on the establishment of the district. Water is to be pumped from Fall River. Three pumping stations are to be established. J. H. Creighton and W. Vineyard are two land owners in the proposed district.

Cal., Anaheim—Contract for construction of levee to be built on banks of Santa Ana River in Anaheim district has been awarded to T. E. Hill, Los Angeles—bid \$33,500.

Cal., Tracy—A power pumping irrigation project for the Banta-Carbona irrigation district was carried at the election in this city recently. The total cost of the improvement is estimated at \$696,000 and calls for seven electric pumping plants and lateral systems. McCray Bros. of San Jose are consulting engineers.

Ida., Twin Falls—By a unanimous vote on May 15th those interested in the development of the Murtaugh irrigation district, including the famous Hansen Butte, voted \$3,700,000 in bonds to provide for the securing and delivering of water to the 37,000 acres within the project. The board of directors of the district will immediately take the necessary legal steps to get the bonds confirmed.

Ore., Bend—Reclamation of the remaining 11,000 acres of the 16,000-acre Tumalo irrigation project has been made certain by the action of the directors of the district in awarding a contract to the United Contracting Company of Portland for \$317,751.75 to complete the project. The total cost of the project will be about \$500,000, or a unit cost of approximately \$29 an acre. Metal flumes will be used in conveying the water.

Ore., Bend—A contract has been let to the United Contracting Company of Portland to construct a dam and diversion canal to transfer the water from the Deschutes River to the Tumalo feed canal. The bid for the work was \$317,751.75. This it is believed will insure the reclamation program of the district which failed years ago due to a leak in the Tumalo project reservoir.

Utah, Salt Lake City—P. B. McKean of Milford, Utah, W. E. Hampton and Dan Murphy of Los Angeles have applied to the state engineer of Utah for the use of 62 sec.-ft. of water from Beaver river, in Beaver county, for the irrigation of 4,365 acres. It is proposed to install an electrically-operated pumping plant, with a well or wells, and to use the channel of the river for carrying the water when pumping is necessary, diverting it in three canals, at a point about ten miles north of Milford and adjacent to the Salt Lake Route.

Wash., Seattle—The Horse Heaven Irrigation district has ratified a \$32,000,000 bond issue and contracts for the construction of the project. The contracts call for a 12-mile canal, 96 miles of concrete lined ditches, 8 miles of tunnel and 9 miles of siphons.

Power Plant Equipment

Cal., Pasadena—The city directors have signified their intention of placing all power and light wires underground in the streets affected by the Colorado St. improvement now under way.

Cal., San Diego—Additional gas holder facilities together with compressor station and equipment are contemplated by the San Diego Consolidated Gas and Electric Company, according to the order issued by the State Commission which authorizes the company to sell \$535,700 in securities, for the purpose of financing the improvements.

Cal., Los Angeles—The General Electric Company was awarded the contract to furnish two synchronous condensers, one of 5,000 kva. and

one of 25,000 kva., to the Bureau of Power and Light of the city of Los Angeles. The contract price is given as \$142,103.

Cal., Los Angeles—The Bureau of Power and Light, has taken out the necessary permits for the new San Fernando power station structure. It is estimated that the building alone will cost \$89,000 and will require 100 days to complete, ready for machinery.

Utah, Logan—The Utah Power and Light Company has started work on the construction of a new pipe line for its plant in the mouth of Logan canyon. It will probably take all summer to complete the line.

Wash., Tacoma—Contract for the turbo-generators, exciters and electrical equipment of the city light department steam generating plant, to be constructed this summer, has been let to the General Electric Company at \$149,037.97 by Commissioner Ira S. Davisson.

Wash., Tacoma—The city light department has awarded contract to Charles C. Moore and Company for two 890-hp. boilers, including installation, on their bid of \$41,900. Boilers are for the new steam generating plant to be erected by the city on Dock Street.

Wash., Seattle—An ordinance creating a special fund and transferring the sum of \$51,000 thereto, to be used in the construction of the proposed Seattle-Tacoma inter-tie connecting the municipal power plants of both Seattle and Tacoma, has been passed by the city council of Seattle and approved by the Board of Public Works of Seattle. The sum named will be used in constructing terminal facilities, including the necessary tie lines, wiring, poles, and other equipment.

Wash., Spokane—The Washington Water Power Company (Spokane) will build nine miles of 13,000-volt transmission lines from the substation at Cle-Elum to the mines of the Roslyn Fuel Company. Surveys are now under way. The same company has also commenced surveys of a 110,000-volt transmission line from Lind to Colfax. This line will be 60 miles long. A 60,000-volt line will be built from Colfax to Moscow, Ida., a distance of 40 miles.

Wash., Spokane—The Washington Water Power Company is planning the erection of a new substation at Lind, Washington, in conjunction with the proposed Lind-Colfax transmission line. Power will be stepped down from 110,000 volts to 60,000 volts.

Power Projects

Cal., Marysville—Proposing to raise the Bulard's Bar dam from 40 feet to a height of 275 feet at a cost of approximately \$600,000, and to build a power house of 6,000-hp. capacity to cost \$300,000, the Yuba Development Company has entered negotiations with the Yuba county board of supervisors relative to certain roads they are willing to build when two or three miles of existing roads are flooded as a result of the company's program. The Yuba company will spend \$40,000 on roads. Roy H. Elliott is vice-president of the company.

Mont., Lewiston—The Federal power commission in Washington has authorized the granting of the application of the Buffalo Rapids Hydro-Electric Company for a power permit for the proposed project on the Yellowstone river about 7 miles from this city. Alvin C. Leighton of Leighton Bros., of this city, is handling the financial details of the undertaking.

Nev., Virginia City—The Truckee River General Electric Company has completed surveys for a high-voltage electric power line from its Virginia City station to the United Comstock Mines near Gold Hill. The line will deliver 60,000 volts and the construction is to start as soon as equipment can be assembled.

Ore., Portland—Earl A. Thompson, Northwestern Bank Bldg., Portland, Oregon, has applied to the state engineer for permission to appropriate 100 sec.-ft. of water from Crooked river, tributary to Deschutes river, to develop power for pumping water and generating electricity. Timber headgate, main canal, wooden flume and generator estimated to cost \$30,000.

Ore., Salem—H. V. Gates has applied to the state engineer for permission to appropriate 500 sec.-ft. of water from Crooked river for power development near Hillsboro, Washington county.

Ore., Salem—The Pacific Power and Light Company, of Portland, has filed with the state engineering department an application to appropriate 8,000 sec.-ft. of water from the Snake river for the development of power in Oregon, Washington and Idaho. The application sets forth that it is the intention of the company to construct 10 power plants along the river in Oregon, Washington and Idaho.

Ore., Portland—An application covering the appropriation of 8000 sec.-ft. of water from the Sanke river has been filed with the state engineer by the Pacific Power & Light Company, with headquarters in Portland. This is believed to be the forerunner of a vast extension program on the part of the power company. The application sets forth that it is the intention of the company to construct ten power plants along the river in Oregon, Idaho and Washington.

Ore., Portland—The California-Oregon Power Company has been granted a permit for the construction of its 115-mile transmission line between Prospect and Springfield, by the federal water power commission, according to P. H. Dater, district engineer of the forest service. The Enterprise Electric Company of Spokane has filed application to construct a diversion dam on the east fork of the Wallowa river just above Wallowa lake.

Utah, Salt Lake City—The Bully Boy Mines corporation of Marysville, Utah, has applied to the state engineer for the use of 20 sec.-ft. of water from Pine Creek, near Maryvale, with which to develop 400 hp. electric energy for use at the Dalton mill and the Bully Boy mine. A 225-ft. head would be developed, and two Pelton wheels, each 4 ft. in diameter, used.

Wash., Stevenson—The Skamania Light and Power Company, here, has requested permission from the Multnomah County Commissioners to construct a power line along the Columbia River Highway from the county line to Crown Point, to furnish power and light to parks, resorts and residences along the highway. It is proposed to put the first six miles of line in operation within 60 days.

Wash., Mukilteo—This city is assured of electric light and power by the Puget Sound International Railway and Power Company, a subsidiary of the Puget Sound Light and Power Company. A contract between the company and the Crown Lumber Company of Mukilteo has been approved, and the power company is making preparations to extend power lines between Everett and Mukilteo, a distance of four miles.

Railways

Utah, Ogden—Contract for construction of 17½ miles of railroad line for the Oregon Short Line in Idaho has been awarded to the Utah Construction Company of Ogden. The Short Line will double track the line between Kinghill and Medbury, near Glenn's Ferry. A portion of the old line will be torn up and rebuilt.

Wash., Seattle—The city council of Seattle has passed an ordinance which has been approved by the Board of Public Works, providing for the expenditure of \$84,400 in the reconstruction of street railway tracks and in the rebuilding

of approximately thirty passenger cars used on the municipal railway lines. The largest single item involves the expenditure of \$31,000 in reconstruction of tracks on First Avenue, from Pine Street to Cedar Street.

Street Lighting Systems

Cal., Pasadena—Extensive additions to the ornamental post lighting are contemplated in the bids calling for 73 posts and the construction of underground conduits on many streets in the business district.

Ore., Corvallis—A new lighting system for the business section of the city of Corvallis was outlined by F. H. Murphy, illuminating engineer of the Portland Railway Light and Power Company, before the members of the Chamber of Commerce, recently. Mr. Murphy recommended a single light standard with 400-watt unit, spaced 100 ft. apart. He approximated the cost of such an installation at \$3 a front foot. A committee of the Chamber of Commerce will make a study of the matter and make a recommendation to the business men of the city.

Ore., Roseburg—Roseburg's present system of cluster lights will be given to the scrap heap and new decorative lamp posts installed in the business section if plans of the city council mature. Mayor Hamilton has been authorized to investigate the cost of a new system and to determine the most practical decorative ornamental posts for the city.

Streets and Sewers

Cal., Marysville—The Marysville city council has contracted with the Warren Construction Company for the paving of fifteen blocks of streets, principally in the residence section of the city. A portion of the paving is to be that for which bonds recently were voted. The remainder will be paving desired by property owners.

Cal., Oxnard—Contracts for the street paving in this city have been awarded to Southwest Paving Company of Los Angeles at a total cost of \$128,363. The work covers grading, culverts and asphaltic concrete.

Cal., San Diego—California Construction Company was low bidder for the 150,000 sq. yd. of asphaltic concrete paving and necessary curb work to be laid on Grape St. City Engineer Rhodes will consider all bids and make announcement later.

Cal., Torrance—The Los Angeles Paving Company submitted low bid at \$85,000 for paving Arlington and Carson Sts. 340,000 sq. ft. total is given as the approximate quantity of paving to be laid. City engineer has recommended that this firm be awarded the contract.

Cal., Vallejo—City Engineer T. D. Kilkenny has completed surveys for paving ten blocks on Marin, Nebraska and Boyson streets. The sum of \$30,000 has been raised by residents of the district for paving the streets, which are outside the city limits.

Ida., Nampa—The city of Nampa will sell special improvement bonds of paving district No. 27 in the sum of \$120,000. This sum, with \$39,000 from the sale of general obligation bonds, will provide \$159,000 with which to take care of contemplated paving, which will cost \$157,000, and provide a contingent fund.

Ore., Corvallis—The Warren Construction Company has been awarded the contract for paving certain sections of Fourth street on a bid of \$51,352. The contract calls for the best grade of bitulithic to cost \$1.89 a yard.

Ore., Portland—Plans and specifications for the Lents trunk sewer, the largest drain yet proposed or constructed by the city of Portland, have been filed with the city council by City

Engineer Laurgaard. It is estimated that the new sewer will cost approximately \$701,490. The plans call for a 76-in. sewer six miles long.

Utah, Ogden—The Taylor-Child Construction Company has been awarded a contract for paving, curbing and guttering fifteen blocks of city streets on a bid of \$168,269.89 for the paving and \$16,415.30 for the curbing. The company which received the contract was recently organized by John M. Child.

Wash., Aberdeen—Three paving contracts calling for the expenditure of \$45,000 have been let to Haukeli, Hegg and Company, local, by the city council. The contracts also call for the planking of the Northern Pacific bridge.

Wash., Bellingham—Recommendation of the city council for the improvement of the Holly Street viaduct by an expenditure of about \$65,000 has been adopted by the city council and a hearing on the project is to be held soon.

Wash., Vancouver—The contract for paving 5.5 miles of the Battleground-Heisson road has been let to the United Contracting Company on a bid of \$121,071.96. The county engineer estimated the job to cost \$139,000.

Wash., Walla Walla—The city commission has awarded a contract for paving two miles of city streets to the Independent Paving Company of Tacoma on a bid of \$81,547.58. The contract calls for a 2½-in. asphaltic concrete base with a 1½-in. top. The contract includes gutters, sewers and manholes.

Waterworks

Ariz., Flagstaff—Plans are being considered for extension of the water system. The Santa Fe company has offered all necessary funds for the purchase of Crater Lake (a natural reservoir with 6,000,000 gallon capacity, owned by Chas. H. Spencer); pipe line to be built on condition that the city operate plant and supply the company at reasonable basis. This would give an additional supply of water to the city of about 12,000,000 gallons.

Ariz., Lordsburg—It is announced that a new water system will be installed at an early date as well as a sewer system—bond issue having been voted for \$110,000 to be used for same. 75,000-gal. tank and water hydrants to be erected.

Cal., Monterey Park—A bond issue of \$225,000 has been approved for a complete waterworks system. Olmstead and Gillelen, Los Angeles engineers, have prepared the plans and will supervise the installation of the system.

Cal., San Francisco—With a bid of \$683,050, the construction firm of Grant Smith Company of Seattle was the lowest bidder on the Pulgas tunnel which is to be bored from a point four miles west of Redwood City into Crystal Springs lake by the city as a part of the Hetch Hetchy conduit to San Francisco. The inside diameter of the tunnel, which will be lined with concrete, will be 10 ft. 8 ins., the same as the main mountain division of the Hetch Hetchy aqueduct, which will carry 400,000,000 gallons daily.

Cal., Vernon—According to the report submitted by City Engineer Howard McCurdy, it will cost the city \$450,000 to install the proposed high-pressure water system for fire protection in the industrial district. The plans provide for duplicate pumping equipment or electric driven and gas driven pumping units.

Nev., Elko—Work will commence shortly on the drilling of eight wells on the China ranch for the purpose of increasing the municipal water supply. It is estimated that the wells will cost approximately \$30,000.

Ore., Condon—The citizens of this place have voted \$90,000 in bonds with which to construct a new water supply system. Stevens & Coon, engineers of Portland, are preparing the plans.

Ore., Oregon City—The Oak Lodge water district has been incorporated with a bonding power of \$100,000 for the purpose of supplying the industrial district with a sufficient water supply.

Miscellaneous

Cal., Benicia—Industrial Site—Bonds to the extent of \$90,000 have been voted for the reclamation of seventy acres of industrial land along the water front and for the installation of a storm sewer.

Cal., Chico—Drainage System—Plans for the drainage of 58,413 acres of rice land along Butte Creek, have been prepared by J. M. Howell, engineer for the Butte Drainage District. The plans have been approved by the county supervisors. It is estimated that the work will cost \$70,000.

Cal., Los Angeles—Dredging—A contract for dredging the first unit of the Union Pacific terminal on Los Angeles Harbor has been awarded to the San Francisco Dredge Company on a bid of \$70,350. The contract calls for the removal of 670,000 yards of material at 10½ cents a yard.

Cal., San Diego—Gas Holder—Construction of a gas holder with a capacity of 6,000,000 cu. ft. has been announced by the San Diego Consolidated Gas and Electric. H. H. Jones is general manager of the company.

Cal., San Pedro—Harbor Improvements—Otto Hanson has been awarded the contract for 118,000 yards of grading at the outer harbor on a bid of \$41,000.

Ore., Salem—Plant Equipment—The output of the Oregon Pulp and Paper Company's plant here will be increased by one-third by the addition of a new paper machine and other equipment that will cost about \$200,000. Thirty more employees will be added at the same time. The new machine will enable the company to manufacture specialty paper lines.

Wash., Tacoma—Wireless Tower—Miller Bros., Tacoma, have secured the contract for erection of a wireless tower at Astoria, Ore., and a wireless operator's house at Northhead, on a bid of \$14,500 for both jobs.

Utah, Ogden—The city commission has authorized the laying of 36 blocks of water mains which will cost approximately \$150,000, according to an estimate submitted by City Engineer W. E. Craven. The pipe will range from twelve to twenty inches in diameter. Bids will be called for within fifteen days for the work.

Wash., Monroe—Contract for construction of extensions to the city's water system, estimated to cost \$80,000, has been let to Northwest Construction Company, Seattle, on their bid of \$66,714.50. Work involves the laying of 12 miles of 6 and 8-in. wood stave pipe, and construction of 1,000,000-gal. concrete reservoir.

Wash., Seattle—Troutman and Company, Securities Bldg., has been awarded the contract for installing a water system for the town of Mukilteo on a bid of \$56,000.

Wash., Seattle—The Northwest Construction Company has been awarded the contract for the construction of the proposed water system for the town of Monroe, Wash.

Wash., Sequim—Contract for construction of extensions to water system of this city has been let to L. L. Lent, Bremerton, on his bid of \$13,916. Work involves the construction of 20,000 cu. ft. concrete reservoir, and installation of 9,700 ft. of 8-in. wood stave pipe.

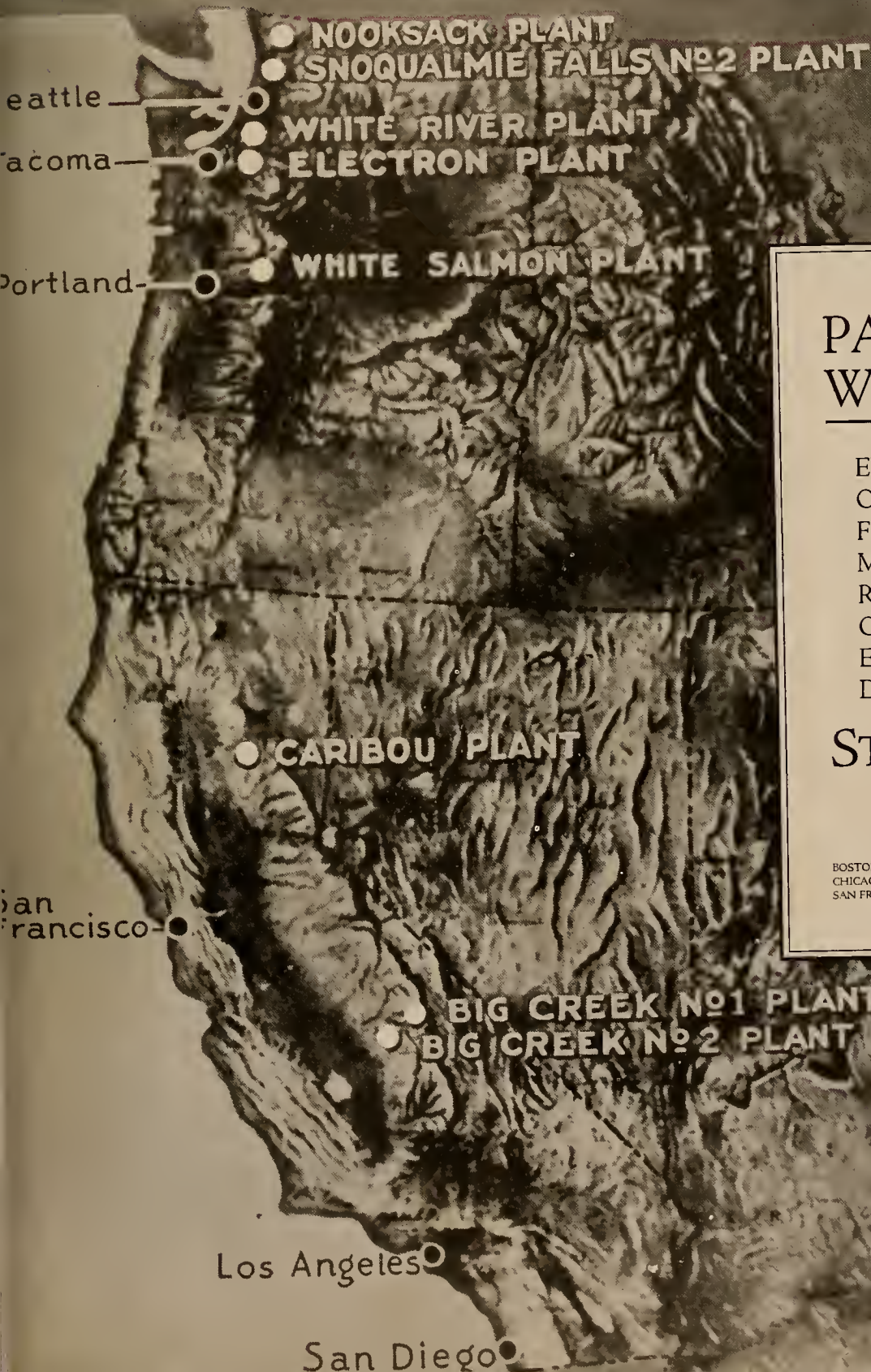
Wash., Walla Walla—The Water Commission of Walla Walla will soon call for bids for improvements to the city's water system which will cost about \$140,000. The work includes a 4-mile pipe line, dam, sluice gates and a telephone line and road to the headworks site.

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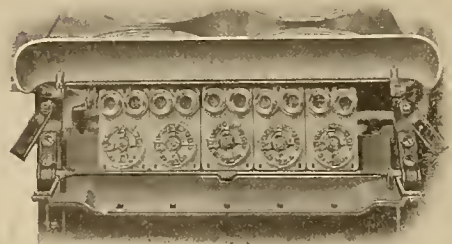
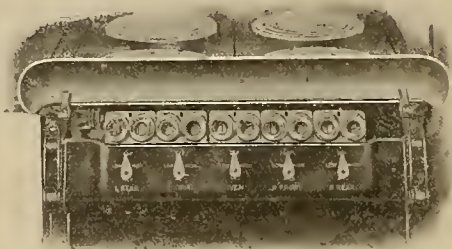
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A Fundamental Executive Failure

HALF a dozen strikes of major importance and a dozen or more minor disturbances between labor and employers have marked the last six months. At the present time the coal strike and the railway shop strike are still unsettled, there is a longshoreman's strike in Portland which is dragging to its conclusion, a taxi driver's strike in San Francisco which has just about petered out and various reports of trouble from Colorado mines. These are but evidences of a condition of persistent labor unrest which is far more widespread. To any impartial onlooker it is evident that there is an unsettled problem somewhere in the relations between employer and employe—an important failure in the industrial system which is doing much to nullify the technical advances and efficiency methods to which so many years of study have been devoted.

Whose is the fault? If machinery is antiquated, or the sales department inadequate, we do not blame the defect against the engineer or the individual salesman, we charge the management with a lack of foresight and a false economy. And if labor conditions are unsatisfactory, if industry as a whole and the large majority of individual organizations present the picture of an armed camp with the employers on one side and the men on the other, separated by mutual suspicions, distrust and misunderstandings, we can only charge this condition to the fundamental failure of the management to solve the human side of their problem.

What constructive attempt has been made to improve conditions? There has been a lavish expenditure of time and

thought and energy upon the physical aspects of industry. Chemists, physicists, engineers and accountants are busy studying out methods of saving wastes and improving efficiency in every mechanical branch, but there is practically no effort of a like nature being put forth toward the solution of human relationships. And yet it is the human beings who operate the machinery, direct the processes, handle the materials and administer the systems and where the mechanical factors are responsible for wastes of a fractional per cent, the loss which comes through friction and lack of interest on the part of the human beings involved can mount up into figures which cut in half the output of the plant.

Boards of administration are not a solution—although their importance should be recognized—no attempt to settle difficulties after they have arisen will bring about anything but a temporary peace. The answer, as to the problem, lies with the individual plant. The solution can be found—it is encouraging to report that there are many (if still a minority) of western plants which are attacking the situation intelligently. The greatest need of western industry at the present moment is the extension of this movement. There is a great reservoir of energy waiting to be tapped in the "willing" work of indifferent or dissatisfied employees. If the western executive will recognize his responsibility to study out the methods of unloosing this force, he will not only have taken the greatest possible step forward toward improving the business of his individual plant, he will have solved a social problem.

The Principles of Rate Fixing

THEORETICALLY prices are fixed by charging for the original cost of the article, plus the expense of handling it, plus a profit, which really is the interest return allowed on the capital invested. In practice the question of how much the market will stand, how much the man next door charges and how much surplus stock is on the merchant's shelves all have their part. All this is not very mysterious and is reasonably understood by the purchasing public. But call it a rate instead of a selling price and give it the authority of the railroad commission, and somehow the system acquires an air of mystery and is looked upon as an arbitrary method of robbery and extortion. The lucid article by an engineer of the

California Railroad Commission which appears on another page of this issue should do much to straighten out misunderstandings.

Rates for electric power are fixed upon much the same basis as any other commodity. An endeavor is made to ascertain the manufacturing cost and the expense involved in delivering the product to the consumer's door. The amount of power purchased, the ability and willingness of the customer to pay, the surplus which the company has to dispose of, all have their part and are rightly taken into consideration in fixing the rate. The function of the Railroad Commission is to see that service is adequately and economically rendered, that the investment upon which returns are allowed is kept down to a minimum, that the rates fixed give approximately the

market return to stockholders over and above the expenses of operation. The entire process is based upon well established principles of rate regulation and is the result of a thorough investigation on the part of the regulating commission.

It may be well to point out that it is this carefully safeguarded neutral system of rate fixing, which the proposed California Water and Power Act would wipe out, substituting in its place the supervision of a Board which is partisan in any dispute which may arise. If a customer is dissatisfied with rates under the present system, there is a court of appeal at hand in the Railroad Commission, which has no interest in enterprises furnishing power and is concerned only with justice. Under such a system as the proposed bill would inaugurate, injustices in rates could be referred only to the Board which fixed them in the first place and which now acts as judge but furthermore is a party in the transaction on the opposite side to the consumer.

The Cooperative Idea in Banking

DIVERSITY of crops and business enterprises has been one of the strongest elements in western prosperity, keeping this section of the country out of the worst of the national financial depressions. This same element is now to be taken advantage of to further the marketing of western crops.

This is the idea back of the recently announced merger of fifty-two important banks in twenty-four cities of Southern California. In this consolidation it is announced that no banks have been bought out and there is no desire to establish an institution which is phenomenally large. It is hoped that through the amalgamation of interests a more complete financial service may be rendered in the marketing of the various seasonal crops of this district. Thus the money returned in the spring from the sale of the orange crop can be used for the fall marketing of the raisin crop, while the returns from this source in turn will be available for the early vegetable grower of Imperial Valley.

The cooperative marketing associations of California have done much to further agricultural prosperity in that state. This is the application of the cooperative idea to banking and offers a new possibility of western service.

American Construction Council to Unite Construction Industry

FOR the first time in the history of American industrial development, a great industry will attempt through an organization known as the American Construction Council to unite all of its elements, including architects, engineers, general contractors, representatives of construction labor, manufacturers, material dealers, representatives of government bureaus, and public utility departments in a commendable effort to raise the standard and efficiency of the construction industry and improve the service which that industry renders to the public.

The cost of construction in every form is an overhead that enters again and again into every department of industry. The standards and policies that are to be adopted by the construction industry are therefore a matter of the greatest importance to all manufacturers and of especial interest to their associations.

One of the first and most important of questions which the new organization must face is whether or not the combinations, agreements and practices which have demoralized the building industry, obstructed its growth, multiplied the cost of construction through vicious collusive agreements with respect to labor and material, are to be continued. The same forces have likewise restricted production and apprenticeship and possessed and exercised arbitrary powers to interrupt work to cause enormous waste through jurisdictional disputes and sympathetic strikes.

All industry is therefore interested, not only in learning whether these root evils are to be recognized and met or whether the industry is to further tolerate the maintenance of material and labor monopolies which must inevitably continue to cause demoralization and corruption in the industry unless rational precautions are clearly and firmly taken to prevent their continuance.

The project is an ambitious one and the attempt to secure the cooperation of all the elements of this industry is of significant importance and is intimately connected to our whole industrial system.

Need for More Attention to Electric Heating

ELECTRICITY is not generally accepted as a satisfactory medium for heating buildings. Yet it has been definitely proven that with due care in designing, proper installation and intelligent operation, electric heating on rates available in sections of the West, where fuel costs are high and temperatures not excessive is not only practicable, but compares favorably with fuel costs and shows favorable load characteristics, to say nothing of its obvious advantages over fuel methods.

Electric heating is an exact science and correct heater capacities may be determined more accurately than fuel consuming heater or furnace capacities. The practicability of heating with electricity depends upon the rate for electric service and the relative cost of coal or other fuel, rather than climate conditions or types of buildings to be heated. Obviously an electric heating rate that would compare favorably with \$18.00 coal might be prohibitive where coal costs only \$6.00 per ton.

There are many sections of the West where it is unnecessary to maintain for prolonged periods a temperature of 30 to 40 degrees Fahrenheit in buildings over the temperature without. Where fuel costs are high and rates are favorable electric heaters of the radiation or convection types are economical and practicable. However, there is need for accurate knowledge on the part of those designing and installing such systems. Estimates and applica-

tions must be based upon sound engineering principles, keeping in mind that a kilowatt hour is equal to 3413 B. t. u. and no more. There is no excuse for guesswork or claims that some watts are "fatter" than others. To be satisfactory, electric heating systems must have at least the same and preferably more heating capacity than other fuel consuming devices.

Economic Conditions Change but Human Nature Remains the Same

A GENERATION ago the working men of this country were obliged to labor from sixty to seventy hours each week in order to earn a sum sufficient to secure for themselves and their dependents a bare existence.

In those days, it was usually necessary for more than one member of a family to obtain employment in order to prevent actual privation.

Today it is possible for the average workman to earn enough each week in from forty-four to fifty hours of labor to permit him to live in a state vastly superior to that of his predecessor. Only in exceptional instances are the wives and children of workmen now compelled to contribute to the family income, although the practice is still followed to a limited extent by the more thrifty.

This change in the economic status of our population has resulted solely from the successful application of superior brain power to the problems of industry. The enormous advances which have been made in the invention and introduction of labor-saving devices, together with the remarkable progress which scientific methods as applied to the management of business have produced, have made it possible greatly to increase the production of most commodities and at the same time to decrease the demand upon human effort.

It is a sad commentary upon the intelligence of our citizens that the contribution made to society by those directly responsible for these benefits is, in general, unappreciated and to a certain degree the well-merited success of many members of this group is an object of envy and frequently of resentment by large elements of their fellowmen.

The New Policies of President Smith of N. E. L. A.

ONE of the best ways of securing cooperation in a great national organization such as the National Electric Light Association is for the chief executive to get out into the field and meet the leaders in the various sections of the nation. Particularly is this necessary in those districts remote from national association headquarters, where but few ever have the privilege of intimate contact with national effort.

It is with no little satisfaction that leaders in the electrical industry throughout the West have witnessed during the past month the president-elect, Frank W. Smith of New York City, attending the sessions of the Pacific Coast Electrical Association

in Los Angeles and the Northwest Electric Light and Power Association at Boise, Idaho. Not only was he in attendance, but the zest and vim with which he entered into discussions and committee meetings where the national slant seemed desirable has won for him a support throughout the West that means one hundred per cent loyalty for the National Association during the months immediately ahead.

The Impending Failure of the Western Fishing Industry

THE outstanding problem of production faced by the cannery operators is the failing supply of fish. Each year the pack is growing smaller. Whether this is occasioned by too much fishing or some other cause has not been as yet determined. The fact remains, however, that here is a great problem in the conservation of our natural resources that should receive research study along broad and basic lines. Not only is the conservation of our salmon, halibut and herring fisheries a matter of outstanding importance, but our animal life such as elk, antelope, mountain sheep, whales and other marine mammals should receive attention. Nearly all of these will sooner or later be classed among the vanishing animals unless effective steps be taken soon for their adequate protection. It is an inspiring sight in the spring to witness the great Alaskan fishing fleet sail out through the Golden Gate to the North for their season's work, but when we contemplate the possibility of these wonderful resources, particularly of the sea, shortly being exhausted it is well that we turn our attention seriously to this problem. Public interest should no longer be delayed in looking toward the protection of the flourishing fish canning industry of the Pacific.

Some Problems in Marketing Western Mining Products

THERE are three outstanding problems that face western industry connected with the marketing of western mining products. The first is the absence of public bids in arriving at metal quotations. The second is the inability of metal producers to regulate in any manner the price of their products, and the third is the matter of transportation rates. As to the first problem, a thorough organization of metal producers and the formation of an exchange seems to be the only sane method of arriving at a solution. Regarding the second question, since metals produced in the West sell largely on a world market, some form of corporation or association to operate internationally offers the best solution. The third problem, on the other hand, is undoubtedly the one of greatest importance. A revision of the freight rates so as to effect very material reductions on low grade ores in concentrate seems a pressing necessity. This matter is now pending before the Interstate Commerce Commission and industry generally in the West will watch its outcome with the greatest interest.

Western Comment on Current Events

Editorial Notes and Readers' Views on the Outstanding Aspects of Financing, Trade Promotion, Legislative and Associated Topics that have a Special Bearing on Western Business

An event of great importance to the West was reported recently in the announcement that the Columbia Steel Company has obtained control of the coal and iron properties of the Utah Coke and Coal Company. This means the early development of a primary iron and steel industry for the West, the lack of which

has always been a retarding influence in western growth, and the exploitation of the vast resources in iron ore with which this region is so plentifully supplied. An idea of the importance of this project to western industry may be judged from the figures of \$725,000,000, brought out by the recent industrial survey of the Journal of Electricity and Western Industry as the probable expenditure during the next ten years for structural steel alone in the eleven western states.

The plan as announced calls for the formation of a new corporation with a capitalization of \$15,000,000 to take over the rolling mills and steel foundries of the Columbia Steel Company and the assets of the Utah Company. It is expected that this development will probably be the basis for other combinations of steel companies on this coast.

Among the business men associated in the project are Wigginton E. Creed, president of the Columbia Steel Company and the Pacific Gas and Electric Company, J. D. Grant, A. E. Boynton, Joseph Sloss, W. P. Hammon, John S. Drum, Herbert Fleishhacker, Mortimer Fleishhacker and Alfred Esberg, all of San Francisco and W. W. Armstrong, L. F. Rains, A. C. Ellis, Jr., A. M. Clark and D. H. Botchford of Utah.

The following statement from Mr. Creed outlines the scope of the project:

An intensive investigation extending over a period of more than eight months has demonstrated that the Utah coal and iron properties can be used to form the basis of an independent steel industry for the Coast and Mountain territory. The West needs the basic industries of coal and iron fully developed and an unusual opportunity exists for progress in this direction by cooperation between California and Utah in the utilization of their natural resources.

Steel mills on this coast have been dependent on China and on points in Pennsylvania, Illinois and Alabama for their supply of scrap and pig iron, and this raw material will now come from the Utah Coal and Coke Company properties, in Carbon and Iron counties in the southeastern part of Utah.

The Columbia Steel Company, control of which is to pass to the new corporation to be formed to manage both this property and the Utah fields, owns and operates a steel foundry at Portland and steel rolling mills and a steel foundry at Pittsburg, California.

The taking over by the city of Los Angeles of the distributing system of the Southern California Edison Company is a transaction which furnishes considerable food for thought as to what the outcome will be if tax free institutions continue to grow in this country. The city paid nearly twelve and one-half million dollars for an investment which yielded about four million dollars in revenue to the Southern California Edison Company in 1921, and upon which this company paid approximately seven hundred and fifty thousand dollars in state taxes.

In the future the city of Los Angeles will probably supply energy to its consumers at about one cent less per kilowatt-hour, because the city does not have to pay taxes. The public will attribute the lessened rates to some inherent superiority of municipal ownership as compared to private operation.

Taxes in California are largely raised from the gross incomes of her privately owned public utilities. This amounts to about seven million dollars from the electric utilities alone. When one city operates its utilities free of this state charge the citizens of other communities "dig up" the difference.

Rest assured that some one is going to pay the taxes, and no matter how painless or indirect the method of extraction, the man of modest income, who depends upon salary or wages and not from tax-exempt bonds, is usually the man who feels the burden most.

According to a telegram made public by the Governor of New Mexico, the final conference of the Colorado River Commission will take place in Santa Fe, New Mexico, on or about August

Final Conference of the Colorado River Commission 1st. Governor Mechem is advised that Secretary of Commerce Herbert Hoover will be in attendance at this final sitting to consider

the apportioning of the waters of the Colorado River. Following the determination of this apportionment will probably come the opportunity on the part of various agencies to secure part of the ultimate benefits which can be anticipated as a result of any comprehensive plan of protection, conservation, and use of this river. Many attempts have been made to interpret the public utterances of Secretary Hoover and other officials as committing themselves to some definite plan.

It is generally conceded that as the Colorado development is an international and inter-state problem, certain projects fall naturally within the scope

of Congressional action. As long as the principle of economy continues to be agitated in the public press, the Colorado development plans would probably be listened to by senators and representatives in Washington who would talk voluminously on the subject. However, certain projects which are neither international, inter-state nor in conflict with the fundamental plans of the whole should not wait upon Congress. Such would seem to be the case in at least one instance, wholly within the state of Arizona where mining and agricultural interests stand ready to proceed with the immediate development of a project which will hasten the economic growth of this state and its industries.

A reasonable amount of good will be done in river-control by every non-storage project; certainly no possible added danger from flood run-offs can result from such developments. As Arizona grows, so the adjoining states and the country at large will profit by the ability of its industries to further develop the resources of the state. Within the last year California business firms alone sold millions in machinery and supplies to the industries of Arizona. A clearer vision of the future and intelligent self interest must be shared by all who manifest interest in the Colorado River Basin.

Information on the kinds of road constructed, cost of various types of roadways and other items incident to the development in road construction during recent years are given by the
Interesting Road Statistics Bureau of Public Roads, United States Department of Agriculture, for the group of states, including California, Oregon and Washington and compared with similar figures for the whole country. The figures are based on completed Federal-aid roads during the period 1916-1921.

In this group of states 109 projects have been completed totaling 702 miles at a cost of 13 million dollars, of which half was federal aid. Of this total 92 per cent was paid for grading, 54 per cent for surfacing, 9 per cent for structures and 5 per cent for engineering, as compared to an average for the whole United States based on 7,480 miles at a total cost of more than 112 million dollars, of 21 per cent for grading, 61 per cent for surfacing, 1 per cent for shoulders, 12 per cent for structures and 3 per cent for engineering.

This group of states spent 10.5 per cent of the total amount expended in the country for surfacing Federal-aid roads and the area surfaced amounted to 8.9 per cent of the total.

The proportions of the total area surfaced with different types of material were as follows: Gravel, 57.6 per cent; plain and surface treated macadam, 1.8 per cent; bituminous concrete, 9.6 per cent, and plain cement concrete, 26.7 per cent; reinforced concrete, 4.3 per cent. The cost of these pavements per square yard was for gravel, 60 cents; plain and surface treated macadam, \$1.01; bituminous concrete,

\$2, and cement concrete, \$2.35; reinforced, \$1.93, as compared with an average cost for the whole country as follows: Gravel, 46 cents; plain and surface treated macadam, 95 cents; bituminous macadam, \$2.10; bituminous concrete, \$2.50, and plain cement concrete, \$2.57; reinforced concrete, \$2.74.

In interpreting these figures and in comparing those for the group with the whole United States, officials of the bureau say it should be understood that there was considerable variation in the conditions under which the roads were constructed, such as thickness of pavement, accessibility of materials, specifications and labor costs.

A five-year program of reforestation in the government forest reserves of the Coeur d'Alene district, especially in the Deep creek and Jordan creek territory, commencing 35 miles east of Spokane, has been announced by forest service officials in the Coeur d'Alene district. In 1910 thousands of acres at the head of the north fork of the Coeur d'Alene river were burned over. Natural reproduction of timber trees followed this burn and would have resulted in a fine stand of timber in 100 years if the area had not been burned over again in 1919.

The 1919 fire was extremely hot, since there were millions of feet of dead timber, both standing and down, left by the preceding fire. The later fire wiped out the new forest growth leaving nothing but bare ash-covered hills, blackened snags and down logs. No seed trees remained living to re-stock the area so if left to follow the natural courses, it would require possibly a tree generation of 120 years for a complete restocking of the forest cover.

A survey of this area was made in the fall of 1921 and it was determined that 14,000 acres on Deep creek (the east fork of the North Fork of the Coeur d'Alene river), and Jordan creek needed to be planted. This project will be started this fall on a five-year plan necessitating the planting of about 3,000 acres a year. This work will have to be done during the fall of each year during the program, since the snow lies so deep on the divides in the spring that transportation of supplies is impracticable until it is too late for planting on account of dryness.

The stock to be planted is made up of yellow and white pine grown at the forest service nursery, Haugan, Mont. The stock will be largely 2-year-old seedlings, which will be planted approximately 800 to the acre so that a total of nearly 2,400,000 will be set out each year.

The degree of success in planting depends greatly upon the weather immediately following the work. The survival of seedlings is in the neighborhood of 50 per cent in dry years, while it rises to 80 and even 95 per cent in moist seasons. The present cost of this work, exclusive of the cost of stock, is from \$5 to \$7 an acre, of which two-thirds is labor.

Letters to the Editor

Industrial Heating a Growing Field For the Application of Electrical Equipment

To the Editor:

Sir: The entire electrical industry is anxiously watching with growing interest the rapid development of the application of electric heat to industrial processes. But a few years ago the term "industrial electric heating apparatus" was confined to such equipment as glue pots, solder pots, small muffle furnaces, soldering irons, etc., and as such was of interest only to the manufacturers of such equipment because of the comparatively limited field of application and the fact that its use was but a matter of convenience.

Its importance to the entire electrical industry now is revealed by the fact that surveys conducted by several large central stations operating in the denser industrial districts have revealed the fact that the potential electrical industrial heating load in their districts is from two to four times their existing lighting and motor load. And in all other districts the field of application is broadening to an extent exceeding even the anticipation of those directly concerned in its development.

It is an interesting observation to note that almost everywhere the cost of a heat unit developed electrically is greater than that developed by gas, coke, coal or oil but just as gas has replaced other forms of fuel, under similar circumstances, so now has electricity come into manufacturing process displacing other forms of fuel for heating, not on the merits of its lower heat unit cost, but because it reduces to a minimum the total cost of a satisfactory product. Its cleanliness, its perfect and certain control of temperature, making possible a higher quality of product where accurate temperature control is essential, its efficiency of utilization and the increased production resulting from its use, are a few of the characteristics more conspicuously responsible for its acceptance. In the automobile industry its use is almost universal for baking enamel on fenders and other parts.

One manufacturer told the writer that the savings effected through the use of a large conveyor type electric enameling oven over former similar gas-fired equipment paid for the complete electrical installation within three months, not to mention the higher quality of the electrically baked ware obtained.

Another comparatively new field of development in which electrical heat has proven its merit, is in the baking of foodstuffs, and already there are a number of highly successful installations of this equipment. The writer was informed by the foreman of a large bakery whose production is about 20,000 loaves of bread per day that in the electrical equipment now used, the savings effected in scaling of bread over former gas-fired equipment, more than paid the power bill. And in the field of application requiring higher temperatures such as the melting of ferrous and non-ferrous metals, the heat treatment of steels, vitreous enameling, etc., outstanding successful installations are at hand, though the field has hardly been touched.

It would be presumptuous to boast that electricity will, within a reasonable time, displace all other forms of fuel for heat generation, but where accurate and positive temperature control is essential in obtaining a high quality product at a minimum over-all cost, its application both within the range of low and high temperature has unquestioned promise. And

in industrial communities, the electrical industry should assess the industrial heating field at a value comparable to that given other forms of electrical power application.

F. F. McCAMMON,

Vice-Chairman of the Denver Electrical Cooperative League, and Power Sales Engineer, Denver Gas and Electric Light Co.

Denver, Colo.

Street and Highway Lighting Exhibit Shows City Possibilities in Adequate Illumination

To the Editor:

Sir: I notice in your May 15th issue of Journal of Electricity and Western Industry an article by Mr. Geo. T. Bigelow, entitled "Why City Streets and Highways Should Be Better Lighted."

It occurs to me that your readers may be interested in the N. E. L. A. Ornamental Street Lighting Exhibit on the Million Dollar Pier at Atlantic City. This exhibit, composed of a representative list of ornamental equipments from



LIGHTING EXHIBIT SHOWS MODERN ILLUMINATION TENDENCIES

The modern type of lighting equipment shows the ornamental possibilities of the present well built standard in contrast to the purely utilitarian and often unattractive earlier lighting systems. There is coming to be a general acknowledgement of the principle that the prosperity of a city or a business district is definitely tied up with the good lighting of its streets.

the various post and fixture manufacturers, gave a definite conception of the day and night appearance of the complete units as well as an idea of the trend of modern street lighting equipment design. The highly efficient equipment which is now available is in marked contrast to the old three and five ball globe cluster units for business district lighting and to the wooden pole—mast arm—dangling wire equipment which has been extensively used in the past for thoroughfares and residence streets. It will be noted that there is a trend toward the lantern type luminaire, and toward the use of rippled crystal glass; the bracket type standard for thoroughfares and residence streets is also rapidly gaining in favor. Most striking of all, perhaps, is the distinct tendency toward a higher mounting height in all branches of ornamental lighting.

The business district units were equipped with 15,000 lumen (1,500 c.p.) lamps, the thoroughfare units with 10,000 lumen (1,000 c.p.) lamps, and the residence street units with 4,000 lumen (400 c.p.) lamps.

J. R. COLVILLE,

Engineering Department, National Lamp Works.
Cleveland, Ohio.

With the Decreased Cost of Living, the Public Will Now Expect Lower Utility Rates

To the Editor:

Sir: There never was a time in the history of public utilities when the question of proper public relations was as important as it is at this time. As a general proposition Public Relations always should be foremost in the minds of public utility operators, and not in their minds alone but in the minds of the employe body as well; but conditions under which we find ourselves today make it particularly necessary that we devote much thought to the problem as it presents itself at this time.

While it is true in normal times that any act or any statement of any employe at any time may be far-reaching in its consequences, it is particularly true at this time when the public mind is set on the hair-trigger and an explosion is always imminent.

I mean to say that during the last two or three years many utilities have been enabled to improve their revenues through favorable commission orders with reference to rates, but in few if any cases have rate increases been more than sufficient to enable the utilities barely to struggle through and continue to operate. Now there is a general tendency toward lowering of commodity costs and labor costs throughout the country and there will be a gradual expectation, which, by the way, has already manifested itself in some quarters, that utility rates will likewise be reduced.

Unfortunately, the public soon forgets. The public will forget, if it has not already forgotten, that any rate increases granted to the utilities were only a small per cent of the increases in other commodity prices during the period of soaring costs. It will forget, if it hasn't already forgotten, that the utilities carried their burdens of high material and labor costs during the period of the war and thereafter until their surpluses and reserves were exhausted and receiverships not only threatened but in hundreds of cases became facts.

The public is in a frame of mind to welcome general reductions in utility rates right now, and unless the utilities exercise wisdom and ingenuity and diplomacy and bring into play all the admirable qualities which commend themselves to the public, there will be an inevitable demand for a lowering of the rates.

So I say it is a critical time in the history of public utility operation from a public relations standpoint, and it is important that we consider seriously and earnestly all the possibilities that present themselves to our minds for cultivating and developing and holding the good will of the public. And it must be something more than a passive sort of good will—it must be a good will which manifests itself in an active interest in our welfare, based upon the realization that a utility can function only to the degree that it is backed up by public sentiment, as one of the foundation stones, and upon a hearty appreciation of the effort of the utility to satisfactorily serve as demonstrated in the attitude and manner of those officials and employes who have personal contact with the public. These are two sides of the arch of ideal public relations and the keystone is the best possible service under any existing circumstances.

In the matter of bringing the public to a realization of its share in the responsibility for the service which the public requires, the Rocky Mountain Committee on Public Utility Information, for example, is doing a splendid work and is rendering a valuable service. The advertising copy which is being prepared by the executive manager and supplied to the several utilities is calculated to strengthen the position of the utilities in their respective communities. The material furnished to public speakers cannot but react favorably upon clubs and civic bodies when presented by men of standing.

The use of the news bulletins will undoubtedly have a pacific influence upon their readers.

But all these are not enough. There must be tireless effort on the part of the operating management so to imbue every employe with the spirit of service and with a sense of individual responsibility for the company's welfare that he will see to it that no word or act of his while on duty or off duty, shall cause any other feeling than that of high regard for the company and appreciation of its efforts; that his every word and action shall be a studied effort to inspire trust and confidence and a sympathetic interest in his company's well being.

As a matter of fact, that is no more than the employe's duty; it is an implied part of his contract of employment. He contracted to work for the company and certainly, indifference, discourtesy, thoughtlessness, or crabbedness, are traits that work against the company. One of the last commands of the Master to His disciples was, "As ye go, preach." I heard a wonderful sermon on that text some time ago, and I must confess that I missed some of the spiritual applications of the text for I found myself applying it to the work of public utility employes. And if I were using that text for a talk to employes I think I would not interpret it as an injunction to stand up in public places and render long discourses, but I would point out the possibility and the duty of preaching by word, by act and by example at all times the gospel of mutuality of interest between the public and the public utility.

As ye go, preach! In the family circle, to social acquaintances, to business acquaintances, in season and out of season, they should let it be known that their company's one aim is to serve, but that the quality and extent of the service necessarily depends upon the active support of the public.

The extent to which it is possible to imbue the several members of an organization with a sense of individual responsibility for the success of an enterprise is illustrated by the story of a stoker on the battleship Oregon. You will remember that when hostilities broke out between our country and Spain the Oregon was off the Pacific Coast. Commander Clark made a record run around the Horn and arrived in time to participate in the battle of Santiago. While the guns up on deck were thundering destruction to the Spanish fleet, a big Irish stoker away down in the hold loaded up his shovel, slammed the coal into the furnace, and exclaimed, "There! take that, you damned Spanish dagoes!"

That is the spirit that we must get into our organizations. Each member must feel that no matter how humble his position, he has an individual responsibility which he must not shirk.

J. F. GREENAWALT, Publicity Manager,
Mountain States Telephone & Telegraph Co.

Cheyenne, Wyoming.

RADIO BULLETINS

The Journal of Electricity and Western Industry broadcasts a special industrial and business news report each Monday night at 7:30 o'clock, both from San Francisco and Portland. The San Francisco report is broadcasted from station KLP, operated by the Colin B. Kennedy Company at Los Altos, California. The Portland report is sent out by the Northwestern Radio Manufacturing Company from station 7XF. Both reports are broadcasted on a wave length of 360 meters.

Builders of the West

GIVING up the cherished ambition of one's youth, after carrying it along successfully for many years as a marginal occupation and yet using it through life as a sort of private secretary to the main business of one's career, is not uncommon perhaps in the complex professional life of the twentieth century, but few men who make such a sacrifice succeed with it so well as has Dr. W. J. Kerr, president of the Oregon Agricultural College, Corvallis, Oregon. It is as an educator that Dr. Kerr is chiefly known today, yet as a youth he had mapped out quite a different career for himself.

Throughout his school days he was interested in debating and quite early in his college career, he decided to become a lawyer, declining an opportunity to go to West Point because he believed that the true battlefield of the country's progress was in the court room. This ambition followed him for several years and through several different occupations—business, teaching and administration. He studied commercial law and made rather extensive readings in general law. But his growing interest and opportunities in educational work were such that he was never able to return to his original plan of entering the legal profession, though he did not abandon it entirely until he came to Oregon and took up his life work of developing the State Agricultural College. His studies in the law, however, have been a never-failing asset to him in preparing educational measures for the legislature and in prosecuting educational campaigns before the people.

Born at Richmond, Utah, and educated in the schools and state university of that state, he subsequently took a higher college degree from Cornell and then went into educational work, considering it a temporary pursuit. Instructor and professor in his state university and finally president of the Utah State Agricultural College, he built up the professional preparation that made him the successful candidate for the presidency of the Oregon State Agricultural College when that position became vacant in 1907. Already he had been president of the Association of American Agricultural Colleges



DR. W. J. KERR

who has just completed his fifteenth year as president of the Oregon State Agricultural College and who, alike through his personal interest in business and his administration of one of the great technical colleges of the West, is recognized as a dominant factor in the development of the Pacific Coast.

and Experiment Stations and a member of the constitutional convention of Utah.

President Kerr's task in organizing and enlarging the work of the Oregon Agricultural College has in the brief space of fifteen years lifted this institution from comparative obscurity to a recognized position among the leading grant colleges of the country. As rapidly as the needs and resources of the state would permit, he raised the requirements for entrance and for graduation, until by 1915 they were fully standardized. The college buildings have been increased three times in number and more than that in value and capacity. Student enrollment has increased over five times. Courses of instruction have increased more than tenfold. The military department has been built up until it has regularly ranked the college since 1917 among the "distinguished institutions"

of the country, with five units of the R. O. T. C. The extension service has been established with an organization covering the entire state and the Experiment Station has been expanded to seven branches.

Early in his educational career, Dr. Kerr formed a definite conception of the function and scope of the land grant college as an institution of scientific and technical training as compared with the state university, which might be classed as a "literary institution." His work in building up the Oregon college has done much to rid the agricultural school of the stigma alike of "trade school" and of "an impractical school of theory" and has placed it on an equal footing with the classical type of college.

President Kerr has the rare gift of broad vision coupled with skill in analyzing details, and to his command of financial problems as well as to his qualities of dynamic leadership may be credited his success as college president. To Dr. W. J. Kerr, as one who ranks among the most constructive college executives in America, a pioneer among educators in the Northwest in the idea of uniting learning and labor, applying science to industry, this issue of the Journal of Electricity and Western Industry is affectionately dedicated.

Do You Devote as Much Time to Your Men as Your Machinery?

The Human Factor Is the Weakest Link in the Chain of Production—A Suggestion of Practical Methods for Studying the Personnel Problems of Your Plant From the Standpoint of Improved Efficiency

By J. DAVID HOUSER
President, Bureau of Management Research

THE arraignment of the organization and administration of American industry found in the report on "Wastes in Industry" recently issued by Herbert Hoover's committee of engineers is as incisive as it is startling. The conclusions are based upon the careful, scientific, dispassionate investigations into industrial methods and results that would be expected from a highly trained group of engineers. Results in industry are shown to be so far below what they should and could be—actual effectiveness is conclusively proved to be such a small percentage of what is clearly possible—that it is almost disheartening. For it would seem to give color to the assertions that our widely heralded material achievements are the result of a wealth of natural resource and an easy environment rather than any large native ability to organize, plan, execute and administer.

One of the principal purposes of this report has obviously been to shock American industrial management into a realization of its comparative inefficiency. It would have been but natural to have presumed that engineering treatment of such a subject would have confined itself to materials, machines, methods and processes. But it is not true of this report. The prevailing emphasis throughout is upon mental and human values. The most forceful generalization to be found in the report deals with the necessity for new attitudes and broader viewpoints on the part of both management and men in industrial enterprises. And a very large percentage of the wastes which are the subject matter of the report are shown conclusively to be wastes of immediate human origin. Lack of proper adjustment of the human factors in industry, misunderstandings, inadequate training and conflicts of authority are typical illustrations.

The Futility of Supposed Cure-Alls

No amount of preaching about the mutual interests of employer and employe or the identical interests of "capital" and "labor," no number of declarations about the desire of the employer to be fair (ninety-nine of every hundred employers want to be

fair and think they are being fair), no number of arbitration boards or no amount of conference machinery, and no amount of publicity, either conciliatory or pugnacious, will ever bring about general and lasting industrial cooperation and harmony in an individual plant or in industry as a whole. Neither will bonuses, profit-sharing, stock ownership by employes, "industrial democracy," "welfare work" or any other one plan do so. There is no universal cure-all for industrial unrest or for inefficiency caused by the dissatisfaction and strained relationships found in the vast majority of American industrial and commercial organizations.

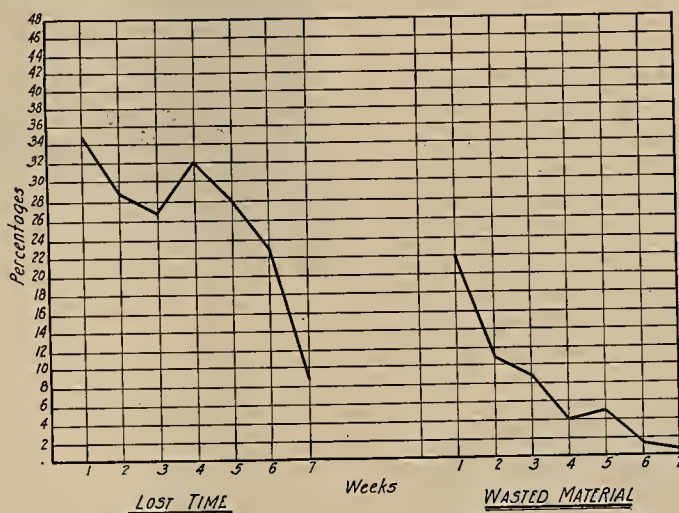
"Inefficiency" and "dissatisfaction" are, of course, relative terms. No industry is completely efficient nor could any humanly be made so. But some industries are more efficient than others, and it is absolutely safe to say that in ninety per cent of the cases the efficiency is in direct ratio to the attention given human problems.

Efficiency is a matter of getting things done—of carrying out most effectively the purposes for which a group of human beings are as-

sociated together with the necessary physical equipment. The latter is not insignificant, but transcending it enormously in importance is the effectiveness with which the human units of the group work together. In other words, the human organization is by far the most vital element to the success—the efficiency—of any enterprise, industrial or other.

What the Human Organization of Industry Deserves

"Personnel work" means the deliberate organization and study of human relationships, the devotion of specialized and careful attention to all of the human phases and problems of an enterprise. It means, briefly, the spending of time and thought upon (1) selection, so that the right man may be placed in the right work, (2) training—so that he may then do the work in the best way and be kept improving, and (3) morale or motivation—so that, having been placed upon work most fitted for him and trained to do it in the best way, he may want



Copy of graphic curves posted on a large board in a mill of the Emeryville plant of the Paraffine Cos., Inc., for the information of the crews. Work done by these crews was analyzed to show percentages of lost time and wasted material further on in the process but caused by imperfections in the work of the mill crews. The interest in competition with the general record and between crews brought about startling reductions in both lost time and wasted material in the seven weeks shown in the chart.

to do his best and keep on wanting to do it. Each of these is a very comprehensive topic, of course, and has much significance and many ramifications.

If the importance of the human factors in industry are admitted, the necessity for such intensive attention must likewise be evident. For the splendid results of industrial cooperation will never be realized as long as human problems continue to receive only the careless and incidental attention that has characterized their treatment all through industrial history. It is such treatment that has made the story of industry one of almost continuous warfare and is the cause of its existence today as a pitifully inadequate social institution. Human beings are intricate organisms and human nature is complex beyond any other force that industry has ever tried to utilize. The matching of human ability to tasks for which it is inherently best fitted, the increasing of that ability for better performance of those tasks or for more complicated ones, the stimulation of enthusiasm and belief, the awakening and maintenance of the will-to-do are achievements that will challenge the highest type of ability that industry can enlist and will justify and richly reward all the concentrated attention that can possibly be afforded.

Psychology, the science of human behavior, and education, the art of increasing human effectiveness, have both been of fundamental value in the creation of a technique for real personnel administration in industry. This technique is yet in its merest infancy, but its extensions and improvements even during the last few years have been remarkable. Nothing can apparently stop its growth and constantly wider application.

A Fundamental of Fundamentals

While the application of such a science and such an art to industrial purposes is only beginning, and while devices are comparatively crude as yet, it must repeatedly be emphasized that no great progress will be made in industry as a whole and none at all in individual organizations without sympathetic imagination on the part of managerial executives. This cannot be stressed too much. This quality is the ability, in homely phrase, to "put one's self in the other man's place." When the owners of industry, and the highest managerial executives who are, after all, responsible for everything that goes on in industry, shall achieve this quality, it can and will be made general throughout industry.

It must be emphasized that this is a vital necessity, that it is not sentimentalism, that its application is intensely practical and realizable, that it has been proved in admirably effective industrial practice. It must also be emphasized that such an attitude of sympathetic imagination cannot function automatically—that it requires definite organization and the practice of a definite technique to carry it into successful execution. This technique is the "personnel work" already described.

Will This Stimulate Imagination?

Just as the general manager was deeply offended when one of his board of directors criticized his methods to a department head in the factory and so

undermined confidence, so such a general manager and all general managers should have the imagination to perceive that as his individuality was not respected, the same fundamental principle was being violated in cases where other men in the plant felt their individuality just as keenly. It was violated when that same general manager issued an order directly to a foreman under a department head without consulting the latter. And down the scale further it was violated when a workman was curtly criticized by a foreman for a poor piece of work for which he had not been allowed to select proper materials.

This principle is ignored in innumerable ways in almost every industry, and to the degree to which



NOON MEETING OF SHOPMEN

Effective personnel work with the Philadelphia Rapid Transit Company has transformed a condition of poor service, no extensions, bankruptcy, no dividends, and strikes to one of unparalleled courtesy and service, high wages, complete extensions, a surplus, regular dividends, no strikes and the death of a once powerful union which the men felt had no longer a function to perform.

it is ignored is that institution a humanly inefficient—and therefore a generally inefficient organization.

Henry Jones and John Smith—Workmen

John Smith waited at the factory gate with a miscellaneous crew of the unemployed. A clerk came to the gate shortly before the whistle blew, looked over the men casually and beckoned to seven. John Smith's name was written on a sheet by the clerk, and he was told to go to a certain part of the plant and see the foreman. After wandering around the place for a time, he finally found the department and the foreman. The latter looked him over with something of a sneer, passed a disparaging remark about his rather slender "build," asked an impatient question or two about what work he had done, cursed the hiring clerk for the kind of men he had been sending him and, because he was harried with a hundred vexatious details and pressed to get work out in haste, put John Smith on a job with a few minutes' introductory explanation, little of which Smith understood. The men near him were being driven and had little time to help him. Besides they were surly, for Smith had taken the place of a man they had liked and who had been summarily fired.

Smith did the best he could, but he made many mistakes. He had to solve practically every problem by the trial and error method or by watching other men. The foreman called him a "fool" and a

"boob" because of spoiled work. The foreman's work was not well organized and Smith was idle many times because of lack of material. A department head railed at "soldiering" to another official within Smith's hearing while looking at him significantly.

Smith was ambitious. He had read, in a flowery and benign statement made by the general manager in a trade organ and for public consumption, that the firm always promoted its men wherever possible and that it hoped every man would try to improve himself so he could qualify for better jobs. Smith had become a fair workman, largely through keen observation and interest in mechanical things. He saw a job ahead in which there were sometimes vacancies. He believed the general manager was sincere. He went to a technical school in the evenings and also took a correspondence course, studying those things which would fit him for the coveted job ahead. A vacancy occurred. Officials asked hurriedly and casually if any one had had any experience in the work. There was no record to show John Smith's hours of hard preparation and his genuine interest. A man was hired from the outside.

John Smith had a multitude of such experiences. He grew daily more cynical and embittered. He also grew careless and indifferent. One day he was given a piece of work in which he was rather interested. He plunged into it. Material was held up. The foreman passed by him, saw him "loafing," yelled at him and there was a bitter altercation. Smith was fired.

By Way of Contrast

Henry Jones heard of a chance to work in a plant where one of his friends, an employe, praised the management and the good working conditions. He went to the plant, entered an attractive waiting room and was carefully and sympathetically interviewed by an employment manager. His qualifications, exact experience and especially his desires and ambitions were recorded in detail. He had expressed an especial interest in one type of work, and in a few days he was called back and employed at that work. Before he was put to work, however, he was given an attractive booklet telling something of the company, its products, its policies, especially toward employes, the regulations that were in force and the reasons for them. He was then shown about the section of the plant in which he was to work and told in some detail about the place of his new department in the plant organization. The employment manager personally introduced him to the foreman who greeted him and introduced him to his fellow-workers.

Jones was carefully trained in an unhurried fashion. He was treated by his foreman in a way that commanded mutual respect. The foreman was himself well trained and realized the responsibilities for teaching and leadership in his job. Jones was occasionally tried at different kinds of harder work. A vacancy in another department occurred. The work was a bit unusual, but he had had some experience with a similar job in another plant. The fact was on record in the employment office, and so Jones' qualification was revealed when the cards were examined before the vacancy was filled. He was tried

on the new job and given some additional training. He made good.

Jones heard talks occasionally about the larger aspects of the work of his department given by the department head or another official. He read articles in the employes' magazine about other departments and how the work of his department fitted in with them. He read and liked the other plant news. He rapidly absorbed the company spirit, and "we" and "our" were often on his lips. He was deeply interested in the employes' organization.

In a hundred other ways Jones found himself and grew. He believed in himself, in the organization and the management. He was happy because he was contented, and he was contented because he was not suppressed by the industrial machinery. The vision of the executives had shown them that this state of mind on the part of Henry Jones and his fellows was the only one through which the organization could approximate its full effectiveness.

Reporting Downward

A happy phrase which embodies something of this new philosophy is that of "reporting downward" in industrial management. The necessity of reports upward from subordinates to superiors has been traditional; these are obligations about which there has been no question. But the management which realizes the value of the reverse process and puts it into practice will reap large rewards.

"Reporting downward" involves giving information to subordinates about what is happening above them in the organization. It is widening their horizon and powerfully enlisting their interest and therefore their intelligent cooperation. It satisfies their craving to know more about the process of which they are a part. It is adding definitely and largely to their dignity and self-respect. Such a practice can go a long way toward achieving industrial partnership between management and men.

An Untapped Reservoir

Probably most of the great revolutionary advances that can be made in industry through technical research and improvement have been made. The possibilities that are open through the fullest utilization of the human resources of industry and commerce cannot yet be conceived, but the challenge to enlightened management is clear. An "enlightened" management is not only management with vision, but it is above all management with imagination.

Roger Babson's recent pronouncement on this subject is most timely:

We are never going to be able to shift the responsibility for industrial peace on to the shoulders of others or to put it on the state. This means that the employer must put thought in the place of force and that some of the same intelligence that has gone into the perfection of mechanical equipment must be given to machinery for gaining and keeping industrial peace. The big costs in the next decade are going to be for this kind of work.

This thing touches industry at all points. In the fierce competition of the next ten years the plant with a thoughtful labor policy will be able to get out its product, to market it, to sell its securities, to satisfy its stockholders. Other plants will fail at some or all of these points. It is therefore time now for intelligent employers to hang up the tomahawk and take down the neglected machinery for industrial peace.

How Electric Rates are Fixed Under Commission Regulation

An Analysis of the Methods Employed by the California State Railroad Commission in Determining the Basis Upon Which Returns Are to be Allowed and in Distributing the Burden Fairly Between Classes of Service

by LESTER S. READY

Assistant Chief Engineer, California Railroad Commission

EXPERIENCE has shown that the business of rendering electric service must be monopolistic in character. As an outgrowth of this situation, public regulation has come into being. Its function is to insure reasonable rates and service to the public and at the same time provide just compensation for the service rendered, to the end that under efficient management and sound financing, adequate service may be continued and expanded to meet the growth of the community.

In California where the network of interconnected systems and the diversity of business throughout the state make this plan feasible, the general policy followed by the Railroad Commission has been toward uniform schedules extending over the entire territory served by one utility. This has favored an even development of the state as opposed to congested industrial districts and has been of particular benefit in stimulating agricultural prosperity.

Fixing rates for any class of electric service requires much careful study and consideration of:

1. Cost of service and its segregation between classes.
2. Value of service.
3. History of development of business under existing rates.
4. Elimination of discriminatory rates.
5. Psychological effect of different forms of rates on the public.

Cost of Service Basis of Rates

The cost of service as applied to the entire business of a utility is equal to the reasonable operating expenses plus allowance for depreciation and a reasonable return on or compensation for the money invested in the property used and useful in the public service.

Operating and maintenance expenses are determined for a given utility from a careful consideration of its actual expense and the reasonableness of same. Owing to variation in expense from wet to dry years, resulting from greater use of fuel oil in years of short precipitation, costs are based on average supply of hydro power. In the case of the Southern California Edison Company the utility has been required to account in a reserve fund for the reduced costs on wet years and increased costs on dry years.

An annual depreciation allowance is made to cover, during the estimated life of the various units of plant, the writing off of the original cost of the property at the end of the estimated life. The depreciation charge included in expense is, of course, at best based on estimates. In the more important recent decisions the utilities have been required to account fully to a reserve for the allowance and also earning at 6% on the balance in the reserve.

Eight Per Cent Return Allowed

The amount of capital on which a reasonable return is allowed is generally determined from an inventory and appraisal of the property used and useful in the service together with a careful audit of the company's books and records. In the main electric and gas proceedings lately decided the Commission has used as the rate base or capital on which a fair return is allowed the reasonable cost of the physical properties plus cost of organization and cost of franchises and water rights purchased by the utility. This figure has been materially less than estimated costs of reproducing the property under the conditions existing during the past several years.

The Railroad Commission has generally found that an annual rate of return of approximately 8% on the rate base is a reasonable compensation for the use of money invested in electric utility industries. A somewhat higher allowance has been made on moneys required to be invested during the period of high costs of money just passed and this accounts for the average rate of 8.3% allowed the Southern California Edison Company. This return covers the amount available to the utility to pay bond interest, amortization of bond discount and expense, interest upon accrued depreciation reserve invested in property, sinking fund requirements and the payment of dividends and for surplus. Actual results show that in the case of reasonably financed utilities this return has been sufficient to attract further investment for additions and extensions of system.

No Increases During Inflation Period

Generally speaking, total revenue and earnings of utilities under regulation have been limited in maximum to the above definition of cost of service. This was especially noticeable during 1918 to 1921, when the value of service greatly exceeded the cost and in most other industries far greater increases than could be justified by increased costs were made in the prices charged.

The determination of the cost chargeable to particular classes of service such as lighting, industrial or agricultural power requires a segregation of costs between those dependent on the demands made and the extent of use of each class. Certain costs, such as fixed charges on investment in transformers and electric generators, etc., are proportioned to the demand made by the consumer, while other costs such as fuel oil are largely proportional to the amount of energy used.

Each Bears His Own Burden

Segregations of costs between classes of service are at best approximations and the value of them is largely dependent on the information available and

the judgment of the persons making the analysis. An assumption generally made in segregating or prorating costs is that each class of service should share proportionally with others in the savings of diversified business. In a broad consideration of these matters, however, consideration must be and is given to the limiting costs. The maximum cost is that in which no credit is given to the limiting costs. The maximum cost is that in which no credit is given for savings in general or joint costs with other classes of service, and the minimum cost is that where the class of service is assumed as sharing in none of the joint costs. Between these limits there exists a considerable leeway in which judgment may be exercised and where other influences may be allowed for. Care has to be exercised, however, that any rates fixed will at least be such as to make a given class of service not a burden on others should it become the dominant or critical load on the utility's system. Failure to realize this fact prior to regulation has caused serious difficulties in the case of agricultural service on certain systems.

A Limit to What Consumer Can Pay

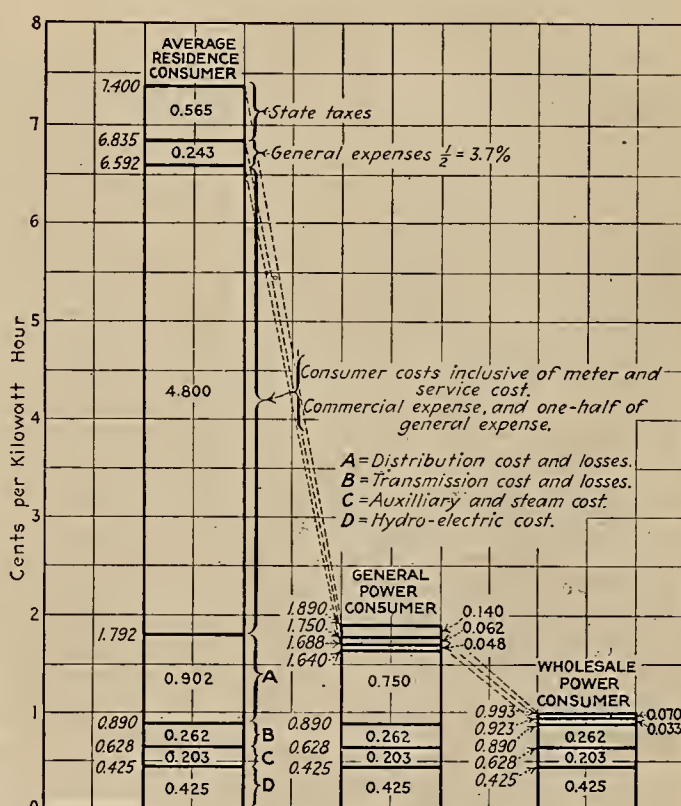
Rates based solely on a determination of the cost of service to the various classes must in many instances be materially modified to meet the economic limitation of the value of service rendered. Value of service in itself is somewhat intangible in nature, being affected by such factors as the quality of service rendered, cost of other sources of power such as gasoline, or Diesel engines, steam power, etc., or, where competing utilities exist, the rates of the other utility. Value of service is influenced also by costs to similar industries in other locations and also by the economic value of the product of a given industry. In fixing rates for service it is of vital importance that distinction be made between actual value of service and unwarranted claims by consumers that their power rates are causing failure.

The value of service in the instance of agricultural consumers is affected by competition with other forms of power, primarily gas engine, and with the ability of the consumer to continue to operate during periods of economic depression or by other influences which prevent profitable operation. Value of service in the instance of lighting consumers is generally much in excess of the cost of service from the standpoint of competition or other sources of lighting but is limited by the amount that consumers will pay for a given service. It has been found in general that regardless of the rates, a consumer's bill for lighting service will vary between narrow limits—if rates are reduced increase in consumption occurs, and if rates are materially increased reduction of use results. A more important condition which affects rates for lighting service is in its nature political. If other communities in adjacent or reasonably adjacent territory enjoy rates, for example, of 5 or 6 cents per kilowatt-hour, it is not possible from the policy standpoint for rates to be much more than 2 or 3 cents per kilowatt-hour in excess of the lower rates, and in sound regulation this must be given consideration.

In general, cost of service on electric utilities has been and even under present economic conditions is largely below the value of service when considered from the standpoint of competition or ability of classes of consumers to pay. In some instances industries have closed down during the present economic depression but this in general has been due to other conditions than power rates.

Former Rates Must Be Considered

Former rates in effect for a given industry or class of service must be given careful consideration in fixing new rates. Consumers often install equipment and make relatively large investments in consideration of the type of schedule in effect and radical change in schedule would be disastrous. Unless the conditions are entirely unreasonable and the result of the continuation of the given form of schedule such as to increase cost of service to the general consumers with further development of business on the existing forms, rates must follow somewhat the



COMPARISON OF COST OF SERVICE TO DIFFERENT CONSUMERS

The average cost per kilowatt-hour at different points of delivery on one of the large electric utilities in California as determined in a recent rate proceeding is illuminating from the standpoint of showing the variation in cost of energy from the hydroelectric plant to the retail consumer. The chart sets forth an analysis of the average cost per kilowatt-hour of power delivered. In the average costs are included the operating expenses, depreciation and return on investment of each part of the system considered. No segregation between demand or energy costs are made, the average costs per kilowatt-hour being shown. It is to be noted that the average cost of energy delivered from hydroelectric plants is 4.25 mills per kilowatt-hour; that to guarantee continuous service and supply that proportion of the power not available from hydroelectric plants in dry years the cost is increased to 6.28 mills per kilowatt-hour to cover interest, depreciation and operation of auxiliary steam plants. Transmission costs and losses bring the cost to 8.90 mills at the main transmission substations. When general expense and taxes are added the average cost of power delivered from the substations increases to practically 1c. per kilowatt-hour. The cost per kilowatt-hour is practically doubled in distributing from the substation to the average agricultural or industrial consumer having approximately 20 horsepower installed. The cost of energy to the domestic lighting consumer is largely in the local distribution and commercial costs owing to the retail nature of his use. Interest, depreciation and maintenance of the service and meter, handling of consumers' accounts and general expense chargeable to consumers' costs are a material item in the large increase in average cost from substation to consumer.

form previously in existence. On the other hand, this condition must not be allowed too greatly to influence future rates for the aim must be to construct rate schedules so that the growth of business will tend to make possible reduction in costs rather than cause increases.

Elimination of Discrimination

The elimination of discriminatory rates between consumers and classes of consumers has been a difficult and unpopular duty of the Commission. As the result of lack of information on the part of the commercial departments of the utilities in times past and the outgrowth of cut-throat competition, many rates have been such as to give special preference to certain consumers and have caused serious discrimination. The Public Utilities Act requires that such discrimination be eliminated and the necessary result has been dissatisfaction on the part of the consumers who have been forced to give up special rates.

Keeping the Consumer Happy

The psychological effect upon the individual and the public in general has to be taken into consideration in fixing rates. Scientific forms of rate schedules must be modified not only to reflect the value of service, effect of former schedules, but must be such as not to antagonize or irritate the public. Sometimes in case of increased cost which can not be overcome except by increased rates, two increases are advisable instead of making too great an increase at any one time. The form of schedule is of special importance in the case of lighting and small power service. A demand and energy schedule, though best from the standpoint of cost and possibly even value of service, is not advisable in the case of lighting service unless in effect from the start. Consumers do not or will not understand the charges. An energy form of schedule closely approximating the other is generally made effective for this reason. Rates for wholesale and large industrial service are not affected to any great extent by this influence as the number is small and reasons for a more scientific schedule can be explained and generally are understood.

General Forms of Rates

In practically all instances lighting rates are expressed as block energy schedules, reducing with quantity consumption. Power rates are expressed in the majority of instances as block schedules reducing for increasing demand and for increasing load factor or hours of use. This approximates more closely the cost of service. Rates for wholesale service and optional schedules for industrial power service are in general of the demand and energy form. This form of schedule more accurately charges each consumer the cost he incurs. Were it not for the difficulty of ready understanding on the part of consumers, this form would be most advisable for all service. In special instances where the load factor and quantity is practically constant, flat rates per unit of demand or a uniform energy rate per kilo-

watt-hour of use are fixed, there being no need of complicating the charges.

The following four schedules are typical of the main types of rate schedules:

SCHEDULE 1—GENERAL LIGHTING SERVICE

RATE:

First	30 kw-hr. per meter per month	9c per kw-hr.
Next	170 " " " " " "	7c " " "
"	300 " " " " " "	5c " " "
"	1,000 " " " " " "	5c " " "
All over	1,500 " " " " " "	4.5c " " "

MINIMUM CHARGE:

Inside incorporated municipalities	\$1.00 per meter per month
Outside " " " " " "	1.25 " " " " "

SCHEDULE 2—GENERAL POWER SERVICE

RATE:

	Rate per kw-hr. for connected loads of—				
	2 hp. to 4 hp.	5 hp. to 9 hp.	10 hp. to 24 hp.	50 hp. to 99 hp.	100 hp. and over
First	50 kw-hr. 5.5c	4.5c	3.5c	3.0c	2.8c
Next	50 " 3.0c	2.3c	2.2c	2.0c	1.9c
All over	100 " 1.5c	1.4c	1.3c	1.1c	1.0c

MINIMUM CHARGE:

First	10 hp. of connected load	\$1.25 per hp. per month
All over	10 " " " " " "	1.00 " " " " "

SCHEDULE 3—AGRICULTURAL SERVICE

RATE:

Size of Installations	Demand Charge	Annual Charge
	1-4 hp.	5-14 " "
1-4 hp.	\$15.00 per hp. per year, but not less than \$30.00 per year.	14.00 per hp. per year
5-14 "		13.00 " " "
15-49 "		12.00 " " "
50-99 "		11.00 " " "
100 hp. and over		
Energy Charge		
First	1000 kw-hr. per hp. per year	9c. per kw-hr.
Next	1000 " " " " " "	8c " " "
"	1000 " " " " " "	7c " " "
"	2000 " " " " " "	5c " " "
All over	5000 " " " " " "	5c " " "

OPTIONAL RATE:

Any consumer may select at his option the following rate instead of the demand and energy rate set forth above.

Annual Consumption per hp.	Rate per kw-hr. for connected loads of—				
	1 hp. to 4 hp.	5 hp. to 14 hp.	15 hp. to 49 hp.	50 hp. to 99 hp.	100 hp. and over
First	500 kw-hr. 3.0c	2.8c	2.6c	2.4c	2.3c
Next	500 " 2.0	1.8	1.8	1.8	1.7
"	1000 " .8	.8	.8	.8	.8
"	1000 " .7	.7	.7	.7	.7
"	2000 " .5	.5	.5	.5	.5
All over	5000 " .5	.5	.5	.5	.5

MINIMUM CHARGE:

First	10 hp. at \$15.00 per hp. per year, but not less than \$30.00 per year
All over	10 hp. at \$12.00 per hp. per year

SCHEDULE 4—WHOLESALE POWER SERVICE

RATE:

Readiness-to-serve Charge:

First	200 kw. of maximum demand	\$1.25 per month but not less than \$250.00 per month.
Next	300 " " " " " "	1.00 per kw. per month
Over	500 " " " " " "	.90 " " " " "
		plus

Energy Charge:

First	100,000 kw-hr. per month	.8 mills per kw-hr.
Over	100,000 " " " " " "	7.5 " " " " "

Rights of Down-Stream Users on Interstate Rivers Sustained

Important Decision by the U. S. Supreme Court on Colorado-Wyoming Controversy Over the Laramie River Establishes Doctrine of Prior Appropriation on Interstate Streams Which Will Facilitate Early Development of the Colorado

By PAUL WOOTON

Washington Correspondent, Journal of Electricity and Western Industry

STIMULATION of development along the Colorado River, the simplification of the problem before the Colorado River Commission and a decided advantage to the states in the lower portion of the river's basin, are results expected to follow the opinion of the Supreme Court of the United States in the case of the State of Wyoming versus the State of Colorado, the Greeley-Poudre Irrigation District, and the Laramie-Poudre Reservoirs and Irrigation Company. The opinion sets up definitely, beyond the power of any appeal, the recognition of prior appropriation of water as obtaining between states which recognize that doctrine. It is a case of first come first served.

Since the lower portion of the basin is in a position to utilize the waters of the Colorado River more rapidly than is the upper portion of the basin, the effect of the decision is to benefit that section of the basin most. It reverses the advantage which had very generally been assumed to lie with the states in a position to intercept the waters before they could reach a user lower down. For instance, the Imperial Valley would be in a position to enjoin any use of water above by a subsequent appropriator which would tend to lessen the water flow in the lower valley, were such action to deprive prior appropriators in the Imperial Valley of water.

The fact that these large priorities have been established in the lower basin creates a great advantage for those who will develop the power resources of the Canyon sections of the stream. To keep prior appropriators supplied in the lower basin diversions above never will interfere importantly with the development of power.

There is some room for argument under this opinion, particularly in that California has followed a dual doctrine of priority of appropriation and the common law rule of riparian rights. There are other factors in the situation which may prolong the controversy but in view of this decision it is believed that the seven states in the Colorado basin will be much more ready to enter into an agreement for the utilization of the Colorado than was the case before it was handed down.

The opinion is a lengthy one, but for the most part it deals with the discussion of evidence in regard to the situation on the Laramie and Poudre rivers. Wyoming in this case contended that waters from an interstate stream cannot rightfully be diverted from one water shed to another which entirely removes them from entering a state formerly enjoying their benefit, and also that prior appropriations made at down-stream points should not be deprived of waters to which they had established a right and for the use of which they had made consid-

erable investment. Colorado, on the other hand, claimed that it is the right of any state to dispose as it may choose of any or all of the waters flowing in the portion of an interstate stream within her borders, "regardless of the prejudice it may work" to other states below and, secondly, that states on an interstate stream have a right to an equitable division of the waters and that she had not received her share. Other specific claims were made and much of the evidence is highly technical. The high points of the opinion are set forth in the following excerpts:

We conclude that Colorado's objections to the doctrine of appropriation as a basis of decision are not well taken, and that it furnishes the only basis which is consonant with the principles of right and equity applicable to such a controversy as this is. The cardinal rule of the doctrine is that priority of appropriation gives superiority of right. Each of these states applies and enforces this rule in her own territory, and it is the one to which intending appropriators naturally would turn for guidance. The principle on which it proceeds is not less applicable to interstate streams and controversies than to others. Both states pronounce the rule just and reasonable as applied to the natural conditions in that region; and to prevent any departure from it the people of both incorporated it into their constitutions. It originated in the customs and usages of the people before either state came into existence, and the courts of both hold that their constitutional provisions are to be taken as recognizing the prior usage rather than as creating a new rule. These considerations persuade us that its application to such a controversy as is here presented cannot be other than eminently just and equitable to all concerned.

In suits between appropriators from the same stream, but in different states recognizing the doctrine of appropriation, the question of whether rights under such appropriations should be judged by the rule of priority has been considered by several courts, state and federal, and has been uniformly answered in the affirmative. *Conant v. Deep Creek Irrigation Co.*, 23 Utah 627, 631; *Willey v. Decker*, 496, 534-535; *Taylor v. Hulett*, 15 Idaho 265, 271; *Howell v. Johnson*, 89 Fed. 556; *Hoge v. Eaton*, 135 Fed. 411; *Morris v. Bean*, 146 Fed. 423; *Bean v. Morris*, 159 Fed. 651. One of these cases came to this court and the judgment below was affirmed. *Morris v. Bean*, 221 U. S. 485. These decisions, although given in suits between individuals, tend strongly to support our conclusion, for they show that by common usage, as also by judicial pronouncement, the rule of priority is regarded in such states as having the same application to a stream wholly within one of them.

The contention of Colorado that she as a state rightfully may divert and use, as she may choose, the waters flowing within her boundaries in this interstate stream, regardless of any prejudice that this may work to others having rights in the stream below her boundary, cannot be maintained. The river throughout its course in both states is but a single stream wherein each state has an interest which should be respected by the other. A like contention was set up by Colorado in her answer in *Kansas v. Colorado* and was adjudged untenable. Further consideration satisfies us that the ruling was right.

The principle of interstate rights established is of importance far beyond the appropriations involved in this suit, disposing as it does of the contention that a state has a right to dispose of all waters originating within its borders.

Why the Manufacturer is Interested in Retail Sales Problems.

The First of a Series of Articles Devoted to an Analysis of the Modern Tendencies in the Marketing of Products and the Advantages of Different Types of Distribution Methods as Applied to Various Classes of Goods

By E. A. KINCAID

THE chief characteristic of modern industry is production for the market. Modern economic society is so organized that there is complete interdependence of individuals and concerns. The tendency is more and more in the direction of specialization of effort upon a product or a family of products and the production of a surplus. Economic activity of this character depends upon the market to absorb the surplus. This tendency is not limited to manufacturing for agriculture is becoming more and more specialized and producers of all sorts are thrown into direct contact with those problems which relate to the market.

When Production Exceeds Demand

The manufacturer is of necessity compelled to study the market and if he does so he will become aware of specific problems, among which will appear the present tendency for production to exceed demand. This is the result of many years of attention to the production side of industry during a period when the marketing problem was not acute. So long as production lagged behind the demand the market absorbed goods without serious difficulty. The chief problem of the manufacturer then was that of making production more efficient. It was not necessary to give much attention to the mechanism of distribution since it was at no time over-taxed and the movement of goods to consumers was sufficiently efficient to take care of all that manufacturers were able to throw on the market.

About 1880 this situation was reversed and production became so well developed that the existing mechanism of distribution did not always work well. With this change the manufacturer was confronted with the necessity of extending his range of vision so that it might include a view of the channels of distribution. When the supply exceeded the demand the market system tended to clog or actually break down and the producer of goods found his access to consumers cut off. This is the present status of industry and business and producers everywhere are giving more attention to the problems of marketing. There has developed a critical attitude on the part of consumers as well. For the failure of the marketing system to function well under new conditions has brought to light defects and inefficiency which were previously overlooked. The channels of distribution have, therefore, come in for critical consideration from both the producing and consuming sides. The attitude of the manufacturer with respect to markets and channels of distribution is, however, somewhat different from that of the consumer and for that reason requires the separate consideration which it will be given here.

The Periodic Business Depression

The manufacturer is, in the second place, compelled to be a student of marketing methods because

of the operation of business cycles. The tendency of business to move from prosperity to depression and then to recover and work back to higher prices and better conditions places a real problem before the manufacturer. In periods of rising prices, during the positive phase of the business cycle, he is at all times confronted with the possibility that the peak of the price movement will be reached and that a business crisis, such as we had in 1920, will set in before he has disposed of his high-priced goods, that is to say, of goods manufactured from raw materials purchased in the period of high prices. If such a condition should come about the manufacturer is confronted with the necessity of a lowering of the valuations placed upon goods in his inventory. Many great plants have had to confront this problem during the past two years and some have seen their assets shrink so rapidly that their solvency was threatened. Still others have been brought to the verge of bankruptcy.

The Marketing Problem of Large Business

Because of the price cycle, inventories have to be marked up in a period of falling prices and then comes the marking down in the period of falling prices. Few concerns who have lived through this process during the past two years would fail to welcome reforms which would tend to mitigate the extremes of the cycle. Large-scale industry has the great advantage of a low cost of production per unit of output. That is the goal of all manufacturing enterprises. But large-scale industry requires large investment in plant and equipment. Against this investment of fixed capital interest charges constitute a fixed charge when the capital has been obtained through borrowing. The problem of industry is to hold down the fixed charges, including such items as interest, to a point which will be safely within the earning power of the industry in the period of depression.

Large scale industry and production for the market involve long-range buying of raw materials and the accumulation of goods to meet demand which will find expression in the near future, possibly six months or a year removed from the date of purchase of raw materials. Thus, the manufacturer is required to have an ample working capital. When price recession sets in and inventories shrink, losses have to be written off and these sometimes result in an impairment of the working capital to the danger point. The long swing of prices up or down therefore imposes upon all industry most acute problems, the solution of which calls for the highest qualities of financial leadership. In the period of falling prices the market loses its power to absorb goods on the previous scale and a manufacturer may find that he must cut down production to some fraction of the normal capacity. In the face of this con-

dition fixed charges continue at the old level. Hence there arises powerful incentive to examine the marketing processes in order to determine the possibilities of stimulating demand. If at such a time demand can be stimulated the per unit cost of production can be held down and the operating ratio may be held well within the danger point. The business depression, therefore, acts as a stimulant of efforts to find channels of distribution which will continue to carry the full output of a factory to the hands of consumers.

Holding a Market Against Competition

In the third place, the manufacturer is to study the marketing system because of the pressure of competition. He may have a good product or family of products and these may be well known to the consuming public, but there is at all times the danger that competition will cut into an established market. An analysis of the marketing system used by a manufacturer for many years may lead to the conclusion that a more effective plan of distribution can be worked out. This may involve attempts to strengthen the existing channels of distribution and it may result in the development of a totally new plan of distribution. At any rate the exigencies of competition in a period of business depression such as we are even now confronted with tend to develop in the producer of goods a critical attitude with respect to the marketing system. The great problem is at all times that of getting effective distribution and it is more acute in the time of depression because at such a time competition is more acute.

The Rise of the Direct-to-Consumer Appeal

In the fourth place, the manufacturer is vitally interested in the distributive system because he finds it necessary to control the movement of his goods until they are in the hands of the consumer. When a sale is made from the factory to a middleman the goods pass into the hands of a firm which has interests that are not in all respects identical with those of the manufacturer. The orthodox system of distribution included the movement of the goods from the hands of the manufacturer to those of the wholesaler and thence to the retailer and finally to the consumer. So long as consumption exceeded the demand the wholesaler was anxious to obtain goods and there was no check in the movement of goods because of the distributive system. But when the conditions changed the wholesaler found himself besieged with the manufacturer's salesmen and he frequently carried many competing lines of goods in his stock. Thus it came about that the wholesaler pushed some goods and failed to push others with most disastrous effect upon those manufacturers who found their access to markets thus impaired. The lowest cost of production per unit called for the absorption of the full output of a factory and this could not be obtained without the fullest cooperation on the part of middlemen. It is a direct result of this condition that manufacturers have developed brands and national advertising as devices to create consumer-demand which will move goods in the face of inefficient cooperation on the part of middlemen. It is now well understood that the manufacturer

cannot rest when he has manufactured his product and turned it over to the wholesaler. He must see to it that these intermediaries function.

Present Methods of Distribution

As a result of the tendency of production to outstrip demand, the production of a surplus for a market, the specialization in industry, the tendency to low per-unit costs attendant upon a large-scale industry, the swing in the price cycle, the competition between producers of like products and the breakdown of the orthodox system of distribution there has grown up new methods of distribution and we now find that goods may pass from the manufacturer to the consumer in any one of the following ways:

- I. From the manufacturer direct to the consumer
 1. Through solicitors or canvassers,
 2. By mail,
 3. Through the manufacturer's own retail stores, usually chain stores.
- II. From manufacturer direct to retailers
 1. Through the manufacturer's salesmen or by mail,
 2. Through one or more of the following kinds of retailers:
 - a. Country general stores
 - b. Specialty stores
 - c. Department stores
 - d. Chain stores not owned by manufacturer
 - e. Mail-order houses
 - f. Cooperative buying organizations of retailers
 3. Through all retailers of a given class who will buy,
 4. Through one retailer in a locality.
- III. From the manufacturer direct to wholesalers
 1. Through salesmen or by mail,
 2. Through all wholesalers who will cooperate with the manufacturer,
 3. Through selected wholesalers having exclusive agencies in a restricted territory.
- IV. From manufacturer direct to special representatives who are not normal parts of the marketing chain such as
 1. Agents,
 2. Commission men,
 3. Brokers,
 who sell to wholesalers, retailers or consumers.

Necessity for Scientific Analysis

Just which one of these channels or combination of channels will be resorted to by the manufacturer in his efforts to command an adequate market will depend upon (a) an analysis of his product or products and upon (b) an analysis of the market. The necessity of making such analyses has now become so well recognized that many manufacturers have adopted the scientific approach. They have engaged the services of experts who have gathered and sifted the necessary data upon which a logical system of distribution could be worked out. Thus it has come about that many factories have research departments whose business it is to ascertain the facts needed to construct an efficient system of distribution. The facts thus obtained have frequently pointed to a system of distribution very different from the simple orthodox channels which for long dominated distribution and which are still largely used. As new products are introduced and new wants are developed the marketing mechanism is likely to become more complicated rather than less so. There is now no traditional system of distribution which exists on the merits of past performance alone. On the other hand there is a tendency to develop any system which will get that distribution which is essential to the efficient operation of the manufacturing plant.

Are We Getting an Adequate Return for Our Municipal Taxes?

It Will Pay the Business Man to Study the Following Analysis of the Costs of Government in the Major Western Cities, With a View to the Returns Which Industry Is Getting From the Taxes It Pays

By WILLIAM H. NANRY
Director, San Francisco Bureau of Governmental Research

THE great increase in the cost of government in recent years is due to: (1) the low purchasing power of the dollar; (2) the cost of debt incurred in previous years, or by previous generations; (3) the need for addition and expansion of governmental services; (4) the necessity of making improvements, deferred during the last decade; (5) the inequitable distribution of the tax burden; and (6) the losses and waste due to irresponsible organization, archaic methods and complicated procedure.

tics, waste, and ineffectiveness in government where these exist.

Misleading Comparisons

No article such as this can adequately analyze a number of cities. It can only point out how they vary from each other, and from averages, in their expenditures for the many functions incidental to municipal government. Each city is peculiarly itself, with many of its problems strictly local. One point should be stressed, however, and that is that the popular rating of a city's economy or extravagance according to its tax rate is worse than misleading. A city tax-rate depends on the ratio of assessed value to full value, the amount of revenue from sources other than taxation, whether state, county and school taxes are raised by the city, and whether all current expenses are included in the tax rate or are partially covered by the issuance of bonds.

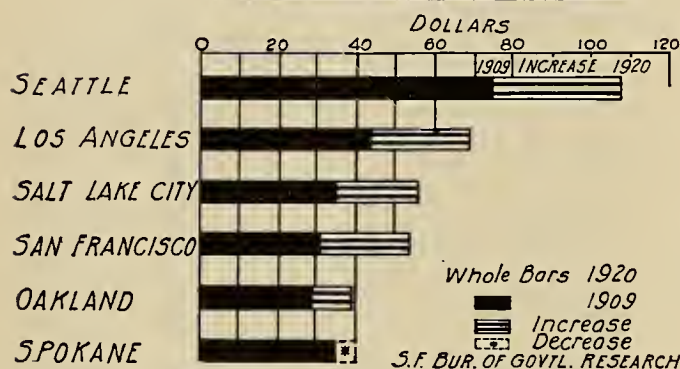
The only measure of the efficiency of governmental expenditures is the return in service to citizens for taxes paid; this can be accurately evaluated only by a scientific survey. Comparative expenditures of various cities, if reduced to per capita costs, are valuable principally because of the questions they raise as to the soundness of the municipal program—whether too much or too little is being spent for schools, health, fire, police, highways, etc., and whether the allotments to each are disproportionate.

Per Capita Costs for Western Cities

The only basis for such fiscal comparison is furnished by the Census Bureau's "Financial Statistics of Cities"; these have been developed and improved over a long period of years and are strictly authentic. One of the accompanying charts based on these Census Bureau compilations, shows the "Per Capita Cost of Government" for six western cities for 1920 and for 1909, and the increase from 1909 to 1920. "Per capita cost of government" includes all costs—expenditures based on the annual budget, which are funded by taxation and miscellaneous revenues, and in addition improvements financed by special assessments, utility enterprises financed out of rate revenues, etc.

The six cities shown and their "per capita cost of government" are Los Angeles, \$69.20; San Francisco, \$53.04; Seattle, \$107.72; Oakland, \$38.74; Salt Lake, \$56.23; and Spokane, \$35.20. Denver and Portland are not shown, as data for these are not included in the Census Bureau's 1920 advance sheets. The average amount of increase for 1920 over 1909 is 43%. Only one city shows a decrease—Spokane, from a per capita cost of \$39.83 in 1909 to \$35.20 in 1920. Seattle is still far the highest, with a "per

PER CAPITA COST OF GOVERNMENT



The capital expenditures of Seattle in its various municipally owned enterprises are responsible for the higher per capita costs of government.

The first two are not subject to our control; the third and fourth can, at best, be only temporarily postponed; only the last two are within our power to correct.

Increases Which Are Justified

It must in all fairness be recognized that changing conditions and community sentiment during the last twenty to thirty years have required a tremendous expansion in governmental activities. This condition has been general and is not peculiar to any one city or section. Census Bureau compilations show that governmental cost payments for the 146 largest cities of the United States have risen from \$514,200,000 in 1903 to \$1,113,600,000 in 1919; from \$24.34 per capita to \$34.60.

A large part of the increase is in reality only a "book cost." Expenditures for education, playgrounds, sanitation, widows' pensions, child hygiene, fire prevention and similar functions which have been initiated by municipalities, produce returns in better citizens, lives and property saved, crime prevented, misery abated, etc., more than commensurate with the amounts expended. The average citizen has little complaint of expenditures for purposes such as these. His complaint is of the cost of poli-

capita cost of government” of \$107.72. In 1909 its per capita cost was about 72% greater than that of Los Angeles, the second highest city. In 1920 this excess had dropped to 55%.

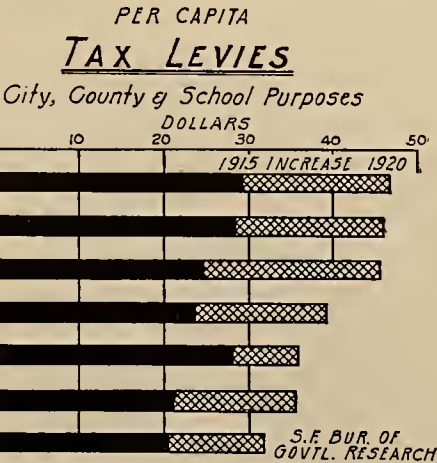
The per capita costs of the several cities are shown in the following table, which also shows the total cost by main divisions: expenses of general departments, interest payments, outlays, and expenses of public service enterprises:

PER CAPITA COST OF GOVERNMENT

		Total	Gen'l Gov't	Interest	Outlays	Public Service
Seattle	1920	\$107.72	\$38.23	\$10.22	\$34.26	\$25.01
	1909	74.16	13.60	5.06	53.66	1.84
Los Angeles	1920	69.20	36.94	4.23	20.62	7.41
	1909	43.19	12.43	1.46	28.12	1.18
Salt Lake City	1920	56.23	26.43	5.56	21.90	2.34
	1909	35.35	13.31	2.79	17.30	1.95
San Francisco	1920	53.04	31.80	4.78	12.14	4.31
	1909	30.96	20.78	.25	9.93	
Oakland	1920	38.74	30.36	2.05	5.26	1.07
	1909	29.00	15.07	1.10	12.80	.03
Spokane	1920	35.20	25.14	4.40	3.88	1.78
	1909	39.83	13.11	2.93	22.66	1.13

Putting Off the Evil Day

The principal disparity in the per capita costs of the various cities is occasioned by the varying amounts expended by each for “outlays” or capital expenditures. This item is the only one of the four



The best measure of cost to the property owner is the “per capita tax levy.” This eliminates such items as are covered by bond issues and gives an idea of the running expenses of government.

from \$1.84 per capita in 1909 to \$25.01 in 1920. Seattle in 1920 spent almost 50% per capita more for public service enterprises than the other five cities combined.

Where the Money Goes

Of greatest interest to tax payers from the standpoint of reducing costs, are the per capita “ex-

PER CAPITA EXPENSES OF GENERAL DEPARTMENTS

		Los Angeles	San Francisco	Seattle	Portland	Denver	Oakland	Salt Lake	Spokane
TOTAL	1919	26.63*	24.09	26.42	23.78	22.00	19.90	19.94	19.88
	1909	12.58	20.79	14.17	11.12	18.06	15.21	13.33	13.13
General Government	1919	3.18	3.24	3.86*	2.79	2.83	1.38	1.69	1.16
	1909	1.06	3.29	1.83	.80	3.22	1.58	1.92	1.33
Police, Fire, etc.	1919	4.39	6.81*	5.65	4.61	3.28	4.12	2.67	3.70
	1909	3.04	7.06	3.40	3.11	3.44	3.34	2.12	2.59
Health and Sanitation	1919	1.55	2.35	2.96*	1.37	1.25	1.38	1.87	1.93
	1909	.85	1.53	1.24	1.14	1.09	1.58	1.56	1.57
Highways	1919	3.46*	1.63	2.61	4.30	2.52	1.54	1.84	2.21
	1909	2.18	2.03	1.17	1.21	2.15	2.62	1.33	1.47
Hospitals and Correction	1919	1.74	2.45*	1.45	.82	1.30	.20	.23	.37
	1909	.15	1.47	.19	.02	1.24	.02	1.00	.13
Schools and Libraries	1919	11.33*	5.58	8.61	8.72	7.93	9.88	10.13	9.33
	1909	4.69	4.30	5.38	4.44	5.55	5.46	5.05	5.63
Recreation	1919	.62	1.02	.60	.63	1.68*	1.09	.86	.79
	1909	.55	.93	.40	.29	.85	.45	.29	.32
General and Miscellaneous	1919	.36	.96	.68	.54	1.21*	.31	.65	.39
	1909	.06	.18	.56	.11	.52	.16	.06	.09

* Highest

that shows a decreased per capita cost for 1920 as compared with 1909, San Francisco furnishing the only exception. The decrease in this item is probably due to the fact that increased costs for routine activities had to be met and new services had to be provided for; the funds required for these were provided, partly by increased taxation and partly by decreased capital expenditures. This has involved the deferring of municipal improvements, and structures, to the extent that construction has been postponed beyond actual needs; it has tended toward public inconvenience and higher operating costs, and will require material additions to the cost of government in the near future.

Seattle, with the highest total per capita cost, is also highest in each of the four main divisions. The disparity in “expenses of general departments” is not as great as for “outlays” and “interest payments” but the disparity in expenditures for public service enterprises is very marked. These jumped

penses of general departments.” These include, in the approximate order of size of expenditures: schools and libraries; fire, police and other protective agencies; highways, including lighting; general government (executive, legislative, judicial, fiscal, etc.); health and sanitation; charities, hospitals and correction; recreation; and general and miscellaneous (widows and employees pensions, etc.). The greatest increase is shown for schools. Los Angeles’ expenditures for this purpose have more than doubled; San Francisco shows the smallest increase, approximately 25%. The major increases, after schools, have been registered by the so-called social expenditures, such as health, charities, hospitals, correction, recreation, etc.

The latest available figures segregating the “expenses of general departments” are those for 1919. The following table shows for each of the six cities and also for Portland and Denver, the total “per capita expenses of general governments,” the segre-

gation thereof, and the 1909 comparative segregated costs for each city.

Seattle Leads in Taxes

The best measure of cost to the property owner is the "per capita tax levy." By the use of this factor, variations in the assessment ratio are equalized and costs that are borne by sources other than taxation—such as special assessment or bond fund improvements, and utility operations that are supported by users and rate payers—are eliminated.

The 1920 "per capita tax levies" for seven Western cities are tabulated below to show comparison with and increase over similar figures for 1915 (1909 figures not available). These data are also shown in the second chart accompanying this article. "Per capita tax levies" for state purposes are omitted to facilitate comparison, inasmuch as the three California cities levy no taxes for state purposes. These per capita levies for state purposes by cities outside of California are as follows: Seattle, \$10.01; Denver, \$5.02; Salt Lake, \$8.63; and Spokane, \$12.59.

	PER CAPITA TAX LEVIES		
	1920	1915	Increase
Seattle	\$46.60	\$29.28	59%
Los Angeles	45.48	28.47	60%
Salt Lake	45.24	23.71	91%
Spokane	39.36	23.27	69%
San Francisco	36.06	27.89	29%
Oakland	35.59	21.11	69%
Denver	31.87	20.23	57%

Need for Business Analysis

The statistics in the foregoing are not offered in any critical sense. If they will serve to enlist the interest of some of the business, technical or professional men in the several communities, their full purpose will have been served. The time has long since passed, when community affairs could be considered, by reason of public apathy, as the sole business of the politician. Increased tax bills have forced public interest in public affairs; there is a general feeling that something is wrong, but a lack of knowledge as to just where the defects lie and how they can be corrected.

If business men will take the time to familiarize themselves with the government under which they live—assuming that they live in an average community—they will readily recognize that the root of the whole trouble is the uncoordinated, clumsy organization, in which no one is wholly responsible, which actually develops the procedure known as "passing the buck," but which blunders along despite its cost and lack of reasonably-to-be-expected effectiveness only because it is supported by the bottomless well tapped by the power to tax.

Marine Fuel Problem for the Pacific Coast

By D. DORWARD, JR.

The greater part of the fleet of vessels now operating from Pacific Coast ports of the United States use oil as fuel. With the exception of Australian and Japanese bunkering ports, coal supplies for re-

plenishing bunkering stations are brought from very distant points of origin so that the cost of bunker coal at foreign stations, and even at Pacific Coast ports, is very high—so much so that even at the present prices ruling for fuel oil, the oil fired vessel is the most cheaply operated from a fuel standpoint.

Growing Use of Oil for Shipping

Statistics show that at the beginning of 1920 the world's merchant shipping approximated 55 million tons, of which tonnage approximately 9 million tons is already on an oil burning basis. The navies of the world are largely on an oil burning basis, for the advantages of oil over coal for naval operations are of the utmost importance and undeniably make for greater efficiency. About five million barrels are required annually for the American Navy.

It is now more than evident that oil for merchant marine transportation has assumed a standing of the utmost importance. It has been conceded by well known authorities that the strength of this demand is such that if necessary it can and will divert from industrial purposes the quantity required for shipping interests. At any rate, the significance of oil in maritime matters explains to a considerable extent the present world wide interest that has been shown in oil.

Even at this stage it is significant that coal is now being brought from Australian ports in American vessels using oil as fuel; and large steamship companies having many vessels usually confine that portion of their fleet operating in Pacific Coast waters to those vessels fitted for oil burning.

Fuel Oil Production Decreasing

California produces between one quarter and one fifth of the world's supply of petroleum oils and one third of the United States' supply. Approximately 60% of the crude oil produced in California is refined, at least in part, before being utilized. The increased demand for gasoline and lubricants and the rapid strides in refinery efficiency are resulting in the refining of a constantly increasing proportion of the oil with a resultant smaller quantity available for fuel purposes.

The demand for refined oil products is rapidly increasing and will be accelerated by the potential oil shortage in other fields of the United States and by the necessity of using California oils to offset this shortage. To meet this increasing demand, California oil must be used more efficiently and sparingly.

Hydroelectric Power for Industry

The consumers of petroleum oil, in short, are now facing a condition of decreasing production and increasing demand, which condition points inevitably to the necessity of developing other sources of fuel for power. Hydroelectric plants can aid materially in the conservation of fuel oil by the production of power. Industrial plants, railroads and similar institutions will eventually have to find other sources of power than that developed by fuel oil, in order to supply the increasing demand for marine purposes.

Eliminating the Waste in Industry

Shortcuts in Management and New Power Applications Which Have Been Adopted in Western Industrial Plants for Eliminating Waste, Increasing Production and Cutting the Cost of Manufacturing Processes

Electric Furnaces Save Freight and Promote Local Industry

The National Carbon Company of San Francisco originally secured its entire supply of high calcined coke from the Niagara territory because the calcining industry had originated to a large extent in that territory.

Several years ago, after a careful investigation of the heavy freight charges which they had to pay in transporting this coke across the continent, and after an investigation of a suitable source of electric energy, it was decided to install electric furnaces in San Francisco and to calcine their own product at their western factory.

These furnaces, each of 600-kilowatt capacity, were diverted from unused equipment at the Scranton factory and set up in a specially designed building in San Francisco. The three furnaces were of the single phase type. A special contract had to be entered into with the Sierra and San Francisco Power Company by the terms of which an independent line was built to the Carbon Company's plant directly from the power company's station so that the demand of these furnaces would not

THIS DEPARTMENT

will be devoted to a discussion of the various problems of waste in industry as they affect western industrial plants. Readers are asked to aid in the solution of the most vital problems facing industry by sending in accounts and pictures of the various practices for combating waste, which have been adopted in plants with which they are familiar. It is only by thus co-operating with Mr. Leurey that the fullest service can be rendered. Space rates will be paid for all material which is published.

affect the power company's distribution system.

The National Carbon Company advanced the cost of this pole line to the power company. This advance was compensated by the power company's refunding 20% of each of the monthly bills. Three furnaces have been in operation for two years and give the most complete satisfaction to the company. With the freight differential as a margin, the coke is manufactured locally at

a smaller cost per ton and in addition this installation has furnished work for local labor and an outlet for approximately 1,500,000 kw-hr. of electric energy annually.

Better Contact with the Public Essential for Utilities

Several executive heads of northern California power companies were recently discussing matters of interest to their respective companies when one official ventured the statement that nothing was worthy of more consideration than the company's contact with the public, not only through its executives but through each and every employee who actually comes into contact with the consumers of electricity.

This executive had studied the causes which lead to misunderstanding and to the multiplicity of complaints, both small and large, which had to be dealt with at the general office and he said that a great many of these complaints would never have originated had the employees on the contact line been supplied with the information which finally had to be supplied from the executive departments at much greater effort and expense.

This executive stated that his company was preparing a plan by which each employee coming in contact with the public, regardless of his capacity and class of duties, would be educated to the point where he could supply all necessary information such as the fundamental rates and general conditions of service which obtain on the power company's system and intelligent information as to bills rendered and an explanation thereof whenever this information was required.

Every man who has done business with power companies or manufacturing companies of any character has experienced at some time the exasperation and the loss of time both on the part of the customer and on the part of the vending company, in attempting to get fundamental information which only results in the inquirer's being referred from department to department until, when the information is finally secured, his patience is often at an end.

Executives are now coming to see the fact that regardless of the special duties for which the employee has been retained, he is first and foremost in the eyes of the public a representative of the company and the public will not condone the fact that they cannot get simple information from him.

The task of educating all of the front line employees of a large corporation seems at first blush a rather gigantic task to tackle, but when it is considered



CENTRALIZED CONTROL ESSENTIAL FOR EFFICIENCY

This combined switchboard and starting station in the warehouse of the California and Hawaiian Sugar Refining Corporation refinery at Crockett, California, controls from a single position the entire conveying system from the warehouse to the refinery. Not only has this cheapened the total cost of the installation, but has proved to be a waste saver by centralizing the control of the conveying system and thereby eliminating expensive jams on the conveyors whenever a shutdown occurred.

that the public as a rule is only interested in a comparatively few facts with regard to the power company or other company operations and that these facts generally relate to rates, prices, or conditions of service, the thing undoubtedly can and should be done, and the large public utilities of California

would be the logical groups to start this character of public service.

A training of employes along these lines would serve the triple purpose of reducing complaints, promoting new business and would to a great extent increase that most desirable of assets—the good will of the community.

High Starting Torque Essential for Motor Drive

Study of Requirements of Duty and Proper Choice of Type of Machine Will Greatly Reduce Mechanical Repairs

In all types of factory installation there is, unfortunately, too little knowledge of the actual requirements of motor drive and an enormous amount of waste has resulted from the improper application of motors not designed for the conditions under which they must work. In general practice there are two common types of alternating current motors—the squirrel cage motor, which has a moderate starting capacity, sufficient for the great majority of loads which are encountered in daily practice, and the wound rotor type,

that it will practically take all slack from the gear train before it actually starts bringing the machine up to speed.

On a large draw bridge on the Feather River the drive gear was wrecked several times, due to this condition, even with a wound rotor motor installed, until sufficient resistance was inserted in the circuit, after which all starting and maintenance troubles from this source disappeared.

A very similar case occurred in a cement plant where a large squirrel cage motor had been originally installed to

repairs have been necessary and no interruptions have occurred on this installation.

A considerable waste is going on in most industrial plants due to this condition of over motoring to produce sufficient starting capacity with squirrel cage motors, and in many cases this has resulted in increased cost of energy, increased standby charges, and increased maintenance cost, which would be more than sufficient to equip the drive with motors of the proper type.

Electricity Removes Necessity of Standby Boiler Service

In considering the use of electricity for heating, too many industrial plants dismiss it as an impossibility on the ground of its apparently high cost. Many of these plants are very large users of electric energy annually and any addition of electric usage which comes on top of the plant's general use is obtained at a very low rate.

In a western milling plant, due to the general change from steam to electric drive, it became necessary to maintain one boiler for the purpose of taking care of water heating in the wash rooms of the factory and of the office heating. This boiler service required the attendance of two men and used an excessive amount of fuel oil due to firing a comparatively large boiler unit for small usage of steam. It was decided to install electric heaters in the office and an electric water heater in the wash rooms.

The energy for these heaters was taken from the main supply to the factory and reduced by a bank of transformers to the voltage necessary for the heaters.

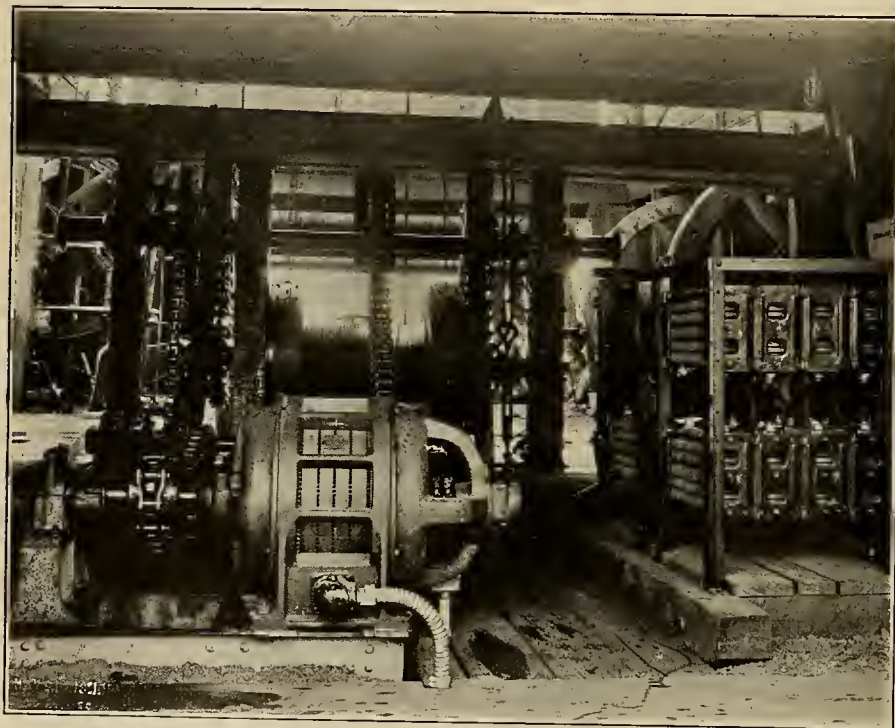
The heaters in the general office were connected to a unit control with thermostat regulator and the heaters in the private offices were controlled by local switches. The size of this building is approximately 40 x 60 feet and two stories in height and the entire investment amounted to \$2,200. During the coldest months of last winter this system was operating continuously at a total usage of 7,000 kw-hr. bought on the low block of power consumption at 7 mills. The standby charges for the connected load amounted to \$20 per month on the basis of 50 cents per kilowatt connected. Therefore, the total cost per month is as follows:

7,000 kilowatt hours @ 7 mills,	\$49
40 kilowatts @ 50c.....	20
Investment charge	20

\$89

It is very obvious that this cost is much less than even the wages of one man in attendance at the boiler room, leaving all other cost out of consideration.

Another similar instance that has proved of advantage was at a local steel plant where large quantities of electric energy are consumed and secured at a very low average rate and in which there is no other demand for steam other than that for office heating. In this case again the entire general office was heated electrically with a maximum cleanliness and convenience and at a minimum cost.



In addition to their capacity for heavy starting duty, wound rotor motors offer the additional advantage of variable speed over a wide range. This motor is performing variable speed service under trying conditions in the California oil fields.

equipped with external resistance and especially adaptable where a starting condition is inherently high and out of proportion to the running duty. Where the starting conditions have not been analyzed the tendency is to choose the squirrel cage motor and to over motor the installation in an effort to solve the starting question. This practice is especially fatal in classes of drives where a considerable amount of gearing is inserted between the motor and its load, and invariably results in the rapid destruction of the gearing and costly stoppage and replacements.

In all of these cases the wound rotor type should be installed and it should be equipped with sufficient resistance so

drive certain machinery. Following this more equipment had to be added, the starting characteristics of which were very heavy compared to the running load. A great amount of trouble occurred from the use of the induction motor, necessitating excessive maintenance and very costly shutdowns. In this case, fortunately, the squirrel cage motor was of such a type that the rotor could be rewound and the original converted to the heavy starting type. This rewinding cost \$1200 against the cost of approximately \$2200 for a new wound rotor motor, and the substitution was made without material cost of time. In one year following the replacement of the squirrel cage rotor no

Western Dealer, Jobber and Agent

Business building suggestions for the store—Distribution and warehousing methods—Advertising and sales promotion ideas

A Retail Location for the Farm Light Dealer

The Experience of a Denver Dealer in Merchandising Small Plants Indicates That Location Has Much to Do with Sales

By JOHN T. BARTLETT

Due, doubtless, to the field served—most buyers are rural buyers—farm light and power dealers have a way of getting out of the retail district for a business location in towns and cities of size. In a city of Denver's size they are likely to get down in that part of the town where wholesale houses and manufacturers' agencies congregate. Rentals here are much lower. There seems no particular loss, in the fact that passing traffic is light, and probably is so negligible that windows displays will get no special thought.

The experience of a Denver farm light and power plant dealer, however, indicates that a location can be picked which will be much better than such a one. The Lalley-Whitmore Electric Company has a location which has, directly and indirectly, led to a sufficient number of sales to have conclusively demonstrated its desirability. This location is on Court Place, in downtown Denver.

This location is in the retail district. It is also in the hotel district. Just around the corner is the leading hotel of the city. Many other hotels are within a short distance. At these hotels a great many visitors to the city from New Mexico, Wyoming and other parts of Colorado put up, and going to and from the hotels they pass the Lalley-Whitmore store.

A few days ago one such visitor had instructions from a friend to buy a bat-

tery when in Denver. A certain company which had sold this user in the past would, in the natural order of events, have received the order. However, the friend happened to pass the Lalley-Whitmore store. Obeying the instincts of the careful buyer, he stepped in to ask the store's price and get other information.

He ended by buying of Lalley-Whitmore, whereas he had fully expected to buy of another dealer. Moreover, the company was in an excellent position to get future business in supplies of this user.

On another occasion an out-of-town man dropped in, remarking that he didn't "intend to buy just now," but since he was passing, decided he might as well come in and get information about the plant the company sold, which he had heard was a good one. Before this man had paid his hotel bill and departed from Denver, the company had sold him a plant.

Mr. Whitmore is so sold on the value to the business of the windows that he terminated recently an arrangement he had formerly had, whereby one of the windows, and half the space within, was rented to another man for \$50 a month. In the sub-renting proposition the company had been interested as a cost-reducing method.

A great deal of traffic passes the store from the Capitol Hill, high-class residential district. This fact is respon-

sible for an occasional sale. Many Capitol Hill residents own country estates, and their buying power has held up a great deal better, it goes without saying, than the farmer's buying power. These people also own summer camps in the mountains.

The Lalley-Whitmore company went after this business just prior to the opening of the fishing and outdoor season, and thereafter, with window displays featuring a special summer camp proposition. This was a plant sold without the battery at \$195. The lack of the battery was not the disadvantage to the summer camp owner that it would be to the average all-the-year user. The price was much more likely to appeal as practical for a plant only used a part of the time.

The windows are changed every little while. Not only plants, but supplies are displayed. One display which aroused much attention was a miniature village lighted by a plant.

This business has given thorough tests to various forms of advertising—exhibits at fairs and stock shows, newspaper advertising, cars equipped with demonstrating apparatus, direct mail effort—and no advertising has more thoroughly and convincingly demonstrated its worth, on a basis of actual results compared with actual costs, than the window advertising directly resulting from its location in the retail and hotel district.

June Bride Week Results in Both Publicity and Improved Sales

Results from the recent June Bride's Week, conducted throughout California under the auspices of the California Electrical Cooperative Campaign, indicate that the campaign was most successful in moving merchandise from the dealers' shelves during what would otherwise be a slack summer period. An incomplete check of newspaper space devoted to this campaign shows the publicity value of the undertaking. The figures are: in the southern part of the state, 560 inches of publicity and 2146 inches of display advertising; in northern California, 819 inches of publicity and 1154.5 inches of display advertising. So great was the interest evinced in the Radio Wedding, that the New York Times telephoned for full details and a photograph of the bride and groom. In checking up the sales effect of the week it must be remembered that the Jobber will probably not feel the effects of the increased sale until somewhat later. Dealers throughout the state, however, report considerable stimulus to sales. Many of them were enabled to move stock which was left over from Christmas.



SEATTLE DEALER OPENS MODEL STORE

J. J. Agutter and Company, Seattle contractor-dealers, recently moved into this attractive new building on the edge of the most exclusive retail shopping district. The store, which specializes in electrical contracting and deals in all types of appliances, is featuring radio equipment at the present time. The company is headed by J. J. Agutter, president of the Seattle Electrical Association.

Early California History Depicted at Sacramento

Electrical Industry Takes Prominent Role in Days of '49 Celebration at California Capital. Whiskers, Costumes, Hoopskirts and Unique Window Displays Features of Fete



The attractive window display of the Electrical Supply Company during '49 week in Sacramento always had a crowd of people around it. It was a faithful reproduction of a miners' camp.



Three attractive young ladies arrayed in the decorative styles of an earlier day were a few of the shining lights of "The Light House," which was the local headquarters of the Great Western Power Co.



The faces above, distinguished principally by the variety and luxuriance of the whiskers, are not part of a rogues' gallery of early-day western desperadoes. Shorn of the disguise of sage brush the following would be revealed: (1) K. L. Engles, Great Western Power Company; (2) W. E. Dugdel, Sacramento Appliance Company; (3) P. Waxon, Waxon Brothers; (4) two pretty members of the Pacific Gas and Electric Company; (5) George Walters, Electrical Supply Company; (6) W. A. Weight, Sterling Electric Company; (7) E. W. Florence, Pacific Gas and Electric Company; (8) C. V. Schneider, Electrical Supply Company; (9) J. C. Hobrecht, J. C. Hobrecht Company; (10) R. J. Finchley, J. A. Warren, W. H. Slickman, Miss Phelps and Mrs. Lanning of the California Mechanical and Electrical Engineering Company; (11, a close up of Mr. Woods; (12) part of the hard-boiled looking staff of J. C. Hobrecht.



G. V. Schneider, of the Electrical Supply Company, is surrounded by what seems to be stage-robbers, prospectors, gamblers and fair ladies, who are all members of his staff arrayed for the occasion.



Members of the staff of the Sacramento Appliance Company, with W. E. Dugdel in the center, are shown displaying one of the many "new fangled inventions" described in the sign above them.

Honesty, Ethics and the Electrical Contractor

A Frank Discussion of the "Curbstoner," the Circumstances Which Created Him, and the Possible Means of Elevating Him

by J. E. BULLARD

The union leaders called a strike. John Jones was a good union man so naturally he went out on this strike. But Jones had a wife and four children to support, and though he was a good workman, had always had employment except during strike and had earned good wages, he had very little saved up. The allowance from the union would not support the family. It looked as though the strike would be a long one, and if it was, his small savings added to the union allowance would not keep him going.

One day he heard of a man who wanted a job of wiring done. It was a job that ought to be done right away, but the strike had tied up the regular contractors to such an extent that none of them were in a position to take it. Jones saw no reason why he couldn't do the work himself. He made an attempt to secure the contract and did so.

He thought he had figured high enough so that he could do a first-class job and make a profit. As he went on with the work, however, he found it was going to cost more than he expected that it would.

The material he was getting he was buying through a contractor, who was supplying several other men in the same way. This contractor considered this a good way to make a little profit while the business was tied up. Anything the men could not handle themselves about the jobs and he could, he did, though supposedly each man was doing the work for himself.

Jones confided in him one day that he was not going to come out even on that job if he reckoned in his regular wages, and between them they figured out what could be left out and still have the work pass inspection and serve the purchaser for a time. In the end the job was completed at a cost that showed Jones a fair wage.

He took other jobs and in each case tried to figure them accurately, but there always seemed to be something that he had left out, and it became necessary to skimp the work in order to make a little money. At first he didn't like to do it. In fact, he would not have done it for he prided himself in his work, but the kids at home needed a new pair of shoes, the wife had to have a new dress or there was one thing or another money was needed for, and he simply had to make those jobs pay.

The more jobs he took and the more he skimmed them, the easier it seemed. He was making a little money. Not much more than day wages to be sure. In fact, not as much as day wages if he figured in the time he spent Sundays, Saturday afternoons and evenings, figuring estimates, collecting money, and scheming out ways and means of saving money on each job by leaving out something that ought to be in it, but would pass inspection if left out.

Accordingly, when the strike ended he decided to remain in business for himself. He increased his business and hired a few men. As the years went by he increased his business still more. He has been making a little money right

along and perhaps is a little better off than he would have been had he remained a wage-earner. But he is not in good standing.

Now there are a lot of Joneses in the contracting business. Like this one, they are not doing a strictly honest business. They are a serious obstacle to those men who want to raise the business to a higher plane. Their number is increasing every year.

It is well to go back and see just why Jones has gone on all these years doing business as he has. When he started he was a good workman. In fact, the first job he took for himself he intended to make a good job. But he simply had to get out of it whole, so he had to get out of it any way that he could. Since he has learned that it doesn't matter so much what price is quoted as it does how much can be saved on the job, and he has gone right along on this basis.

Had Jones known anything at all about business he would have figured that first job higher. He could have gotten any reasonable price for it, because it simply had to be done. If he had known what it was going to cost he would have asked a price that would have covered the very best job he could do and still left a profit. Then he could have pointed with pride to this first job and secured others on the strength of it. Instead, he has been getting all his business on a price basis. He secures no work where quality is the first consideration.

His method of doing business has made him suspicious and he does not take much stock in the meetings of the local association. He figures that it is just a scheme to get the best of him.

And right here we get down to the real reason why Jones is not doing business on a more honest basis than he does. He doesn't know how. The only actual business training that he has had he got from that unscrupulous contractor who was encouraging the strikers to go in business for themselves in order that he could make a profit on the supplies and material that he sold them. He knew that no jobber in town would open an account with them and this gave him a chance to make a real profit out of them.

If the business education of Jones had not been neglected he never would be the sort of business man he is today. By nature he was honest, but he needed money, knew nothing about business and thought after the first few jobs that he was developing into a good business man.

By the time he did really become a contractor his mind was poisoned to such an extent that he was an almost hopeless case.

What Jones did not understand, and what a lot of contractors that started in business with no more business training than Jones do not understand, is that even though the business is merely a one man affair, that man getting the business, doing the work and everything else, there are certain things that must be done and considered if a real profit is

to be made. Jones, for example, did not stop to consider that he had to spend part of his time as a sort of general manager of his little business. He did most of this work outside of regular working hours, and to this day does not figure it into the cost of a job as he should.

He had to spend part of his time keeping books, but those books were very crude, did not require much time, and he overlooked this cost. When it came to satisfactory financial relations, he never has had any. He does not know enough about his business to make up an accurate statement of his business and he would have a very hard time borrowing money from the bank unless he could get a friend to sign his note.

He still thinks that he has practically no overhead. Hasn't he already proved that? He has been able to do business without giving overhead serious consideration.

The only time that Jones could have been taught the fundamentals of business was when he was still working for wages. It is doubtful if he would ever have tried to go into business for himself if he had been given a little better business education. It is certain that he would have been a much better business man if, after having received this education, he had gone into business.

Few men are dishonest because they want to be. Some are dishonest because they do not know any better. Some are dishonest as a result of circumstances. Some do not even know that they are dishonest.

Any man who bases his estimates on the prices that others quote and then tries to make money on the job is not strictly honest. At the same time he may consider himself so. He considers himself so because this may be the only way that he knows of arriving at a fair price.

Just so long as men with no business training and no business education are allowed to become full-fledged contractors, the code of ethics used as a standard by the average contractor cannot be as high as it should be and must be if the contractor is to take the place in the community he is entitled to take. Some way must be found to educate a man before he starts in business for himself. Leaving this education until after he is started is delaying it too long.

The desired result may be accomplished by holding educational classes for all the workmen. It may be accomplished by having laws passed that require a certain amount of business as well as electrical training before a man is licensed as a contractor. It may be accomplished in any one or a combination of other ways. The big thing is a realization that it is much better in the end to see to it that a man is just as good a business man as he can be made before he starts—at least that he is going to do an honest business—than it is to try to make him a good business man and an honest contractor after he has been taught and has tried other ways. It is more satisfactory to keep him innocent than to try to reform him.

Activities of the West

A Business Man's Department Devoted to Events and Developments in Western Industrial Centers—Including News of Interest to Readers in Public Utility, Industrial and Trade Fields

Uniform Accounting Adopted by Idaho Utilities Commission

The public utilities commission of Idaho has issued an order, dated June 27, adopting the uniform system of accounts prepared and recommended for adoption by the state commissions at the annual meeting of the National Association of Railway and Utility commissioners at Washington, November 12, 1920. The order is known as general order No. 29 and supersedes the system of accounting for electrical utilities provided for in general order No. 7 of the commission, dated October 27, 1913.

All electrical utilities operating in the state of Idaho are obliged to use the new system after January 1, 1923, and all reports to the commission after that date will have to be made in accordance with the requirements laid down in the system.

The order of the commission states that the system is adopted as it now stands, but that a further hearing will be held October 15, 1922, to consider amendments, if there be any at that time.

Several other western states have adopted the system, which was recommended by the national association because of the many electrical utilities doing business in more than one state, and being required to conform to the method of keeping and reporting accounts used in each of the respective states.

California Railroads Lose Protest Against King Tax Bill

A petition of the Southern Pacific and Atchison, Topeka and Santa Fe Railroad companies for an injunction to prevent the State from collecting increased taxes under the King tax bill was denied by the United States District Court. It was stipulated, however, that the difference between the tax specified in the King bill and the tax formerly paid should be impounded until such time as the State Supreme Court passes on the legality of the King measure.

The railroads had claimed that the King bill which readjusted corporation taxes, demanded an unfair return. The State's side of the case was represented by Attorney General Webb.

The members' forum of the Portland Chamber of Commerce, by a vote of about 3 to 2 has expressed itself in favor of the Daylight Saving Plan. The city of Portland, however, after taking the matter under advisement and obtaining an expression of opinion from the people of the city, decided unanimously against the plan, and the matter is officially dead as far as this community is concerned.

Compromise Offered in Denver Gas Rebate Case by Company

Under the terms of a compromise offered by the Denver Gas and Electric Company in the gas rebate dispute which has been in the court for some years, the city would receive \$700,000 in full payment and the gas company would be under obligation to spend \$2,000,000 for improvements.

Since 1918 the city has been trying to enforce one section of the company franchise granted in 1906, through which the city was to collect all money in excess of 75 cents a thousand cubic feet of gas. These charges, during the past four years, have resulted in claims aggregating a little less than \$1,000,000. Bills which the city has refused to pay the gas company total close to \$300,000. In its claims the city demands payment of \$960,000.

Although no action has been taken in regard to the proposal at a late date, it is understood that the plan is acceptable to the city.



NIGHT CONSTRUCTION ON HETCH HETCHY Work on the Hetch Hetchy water and power project of the city of San Francisco is being pushed forward with night and day shifts. The lamps shown are 1000-watt Mazda in RLM reflectors suspended from messenger wire strung across the gorge.

Don Pedro Power Not to be Sold Wholesale to Power Company

Voters of Modesto and Turlock irrigation districts, by a vote of almost 3 to 1, rejected a proposal of the Pacific Gas and Electric Company to purchase the electric energy developed at San Pedro dam. The voters also voted to distribute the power of the dam themselves and to issue bonds in the sum of \$1,000,000 to erect power plants, pole lines and transformer stations.

Water Rate Reductions on Steel Feature of Rate War

An early end to the intercostal rate war recently inaugurated by the withdrawal of two of the Pacific steamship lines from the joint conference, is seen in the continued downward trend of rates, which cannot long be maintained.

The Pacific Mail and the American-Hawaiian Steamship Company have announced increased service, the former more than doubling its cargo capacity by the addition of four 10,000 ton passenger and freight vessels and the latter announcing a weekly instead of fortnightly sailings from Philadelphia.

The Pacific Mail will maintain sailings from New York for Pacific ports every ten days for freight and every seventeen days for passengers under the new schedule.

Several new reductions were announced including the rates on steel products, which were quoted at 45 cents per hundred pounds instead of 60 cents, the old price; furniture \$1 instead of \$1.80 and canned goods 50 cents instead of 75.

Local shippers, it was reported, are demanding that intercostal lines give them a guarantee on prevailing rates for the season, but this has been refused so far by the operators. Freight bookings, as a result, have dropped considerably, especially in dried fruit and canned goods.

Utah Commission Denies Special Rate For Electric Furnace

The Public Utilities Commission of Utah has entered a decision denying the application of the American Foundry & Machine company for a special rate, based on power consumption only, with which to operate its electric furnace. The application was filed about three years ago. This case has been held pending decisions in the special contract case and the application of the Utah Power & Light company for an increase in its regular power schedules, which cases were decided some time ago.

The foundry company alleged that it could not afford to pay the regular schedule rates, particularly the demand charge, for power. The commission, however, argues that if it were to take into consideration the ability to pay of a single customer it would end in every customer having a different rate, and all uniformity of rate structure would be destroyed with illegal discrimination the result. "Rates," it says, "must be based upon cost of service," which was the consideration kept in mind by the commission in fixing the present power rate schedule of the Utah Power & Light company.

Events in Washington of Interest to Western Men

A Survey of Recent Developments in the Nation's Capital by
Paul Wooton, Special Correspondent of the Journal
of Electricity and Western Industry

While the Swing bill, providing for flood control in the lower Colorado River basin and for the utilization of the water for irrigation and power purposes, probably will be amended in many particulars, it seems probable that the Committee on Irrigation of the House will recommend the passage of the measure. The recess which the House has taken has interrupted the hearings on the bill but the hearings will be continued immediately on the reassembling of the House in August.

While the greatest pressure for this legislation is coming from those who need protection against floods,—irrigation, power and mining interests are contributing importantly to the influence being brought to bear upon Congress. The mining industry is particularly insistent. The highly mineralized territory which could be furnished with power if the Boulder Canyon dam was built, is suffering because of the almost prohibitive expense of generating steam for power purposes and by the high cost of living due to the limited area which can be used for agricultural purposes without cheap power to pump water. As a result the mining interests are very actively urging the development. The acting director of the Bureau of Mines, in a letter to the Committee on Irrigation, not only urged the development so as to stimulate the production of minerals, but to develop Arizona to the point where it would be possible to continue the railroad from Ajo to the Gulf of California, thereby giving an outlet to tidewater for the products of a region whose nearest port is San Diego on the West and Galveston on the East.

The mining interests also are urging action by the Federal Power Commission on the water power application of James B. Girand. His application covers the development of power at Diamond Creek on the Colorado River. The matter was discussed at the last meeting of the Federal Power Commission. It was decided to extend Mr. Girand's preliminary permit until November 30, but the Commission declined to depart from its policy of issuing no licenses on the Colorado until a policy covering the River as a whole has been evolved.

Some are urging that there is no real necessity for constructing the Boulder Canyon dam to a height of 700 feet at this time. Some contend that a dam 300 feet high would be adequate to furnish all the storage that will be necessary for many years to come to supply all requirements for power and irrigation, and at the same time would provide flood protection. Representative Swing, the author of the bill, contends, however, that it would be much better business to construct the dam to the full height at the start.

Trunk Highway Construction

To stimulate the construction of important trunk line highways through the thinly settled regions of the public land states, special provision has been made so that the Federal Government

may participate in such construction to the extent of 50 per cent plus a percentage ratio of the total estimated cost equal to one-half of the percentage which the area of the public land bears to the total area of the state. The maximum Federal aid of \$16,500 per mile is increased by a like percentage. The amount per mile and the percentage of the total cost that can be paid from this year's \$50,000,000 appropriation is shown by the following (the percentage payable by the United States and the maximum Federal aid payment per mile, are given): Arizona, 61.11 per cent, \$20,167.20; California, 59.31 per cent, \$19,575.49; Colorado, 56.12 per cent, \$18,521.43; Idaho, 58.01 per cent, \$19,144.97; Montana, 53.04 per cent, \$17,503.23; Nevada, 87.22 per cent, \$28,784.51; New Mexico, 61.50 per cent, \$20,237.58; Oregon, 61.13 per cent, \$20,175.12; Utah, 78.85 per cent, \$24,701.89; Wyoming, 64.65 per cent, \$21,335.83.

Expiration of Pittman Act

As only little more than a year will be required to replace the treasury reserve of silver, sold under the Pittman Act, active negotiations are in progress looking to the formation of a silver export association. While it may not be possible to maintain the price of silver at \$1 an ounce, as is provided in the Pittman Act, it is believed much can be accomplished by providing for the orderly marketing of the production of the United States and Mexico. These two countries furnish 40 per cent of the world's silver. Most of the Mexican production is marketed through American agencies. By the formation of an export association along the lines of that conducted by the copper producers, it is believed that the demoralization of the American silver producing industry, which is threatened by the expiration of the Pittman Act, can be prevented.

Bishop Creek Development The Nevada-California Power Com-

pany, of Riverside, California, has applied to the Federal Power Commission for a preliminary permit covering a power project which involves the construction of four storage reservoirs on the headquarters of Bishop Creek in Inyo County, California. The water is to be utilized in four existing plants on Bishop Creek. The Colorado Power Company, of Denver, has applied for a license covering the following transmission lines: Saguache extension from the Cocomonga distribution line to Saguache, 14.16 miles; Eagle extension, Bonanza to Eagle mine, 3.29 miles; Express extension, Bonanza to Express mine, 1.69; Queen City extension, Bonanza to Queen City mines, 1.84 miles.

Sacramento Flood Work

Early action is expected by the Senate on the bill authorizing the California Debris Commission to reimburse the City of Sacramento for the \$161,557.08, which it expended in the construction of a weir, a part of the flood control plan on the Sacramento River. To relieve the city of a flood menace, Sacramento advanced this money at a time when Federal funds were not available for the work. The Senate committee has endorsed the bill in exactly the same language approved by the House, thereby making possible its passage without the delay of a conference between the two Houses.

Colorado River Commission Will Meet August First

Word has been received by various western members of the Colorado River Commission that that body will hold its next meeting on Tuesday, August 1, at some place in New Mexico to be designated by the governor of that state. The meeting will probably be held in Santa Fe.

The commission is expected at this meeting to proceed with the formulation of some sort of plan for the distribution among the states of the Colorado river basin of the waters of the river. This plan will then be presented to the various states for ratification. The plan will be prepared in the light of such information as was gathered at a series of meetings held by the commission throughout the basin this spring.



Two of five 300-hp. 440-volt 3-phase motors for the Big Creek development of the Southern California Edison Company. Each motor weighs over 5 tons and the entire shipment weighed 122,000 pounds and required three cars. The motors were sold by the C. W. King Company of San Francisco. They were formerly in the Akron plant of the Goodrich Tire and Rubber Company and were brought to the Pacific Coast and reconditioned. Before shipment each car was covered with heavy canvas to protect the machines from dampness.



CASCADE FIXTURE COMPANY MOVES TO NEW QUARTERS IN SEATTLE

The Cascade Fixture Company, formerly located at 1517 2nd Avenue, Seattle, recently moved to new sales quarters at 418 Union Street, pictured above. H. E. Gleason is president and manager. This concern was originally called the Cascade Gas & Electric Fixture Company; later this name was changed to the H. E. Gleason Company, and still later to the Cascade Fixture Company. The company has been in business in Seattle for

17 years. The showroom herewith reproduced, handles electrical fixtures, manufactured by the company in its own plant at 1710 Yale Avenue, also pictured above. The Yale Avenue manufacturing plant employs 54 people, and operates continuously, serving customers in the Pacific Northwest, California, Alaska and the Orient.

Call Issued for Fall Conference of Electric Cooperative Leagues

The Society for Electrical Development has authorized the issuance of a call for a conference of representatives of local cooperative leagues. Invitations will also be extended to cities and localities contemplating the formation of such a local association.

The definite time and place of this conference will be later determined, but will probably be held during either September or October, after a canvass of the situation indicates how many will attend.

The prime purpose is to create an opportunity for the exchange of ideas and experiences which may assist in more effectively carrying forward local activities, by a more intimate knowledge of practices maintaining in all sections of the country, and also to formulate plans for the future continual exchange of information in a practicable and workable form.

Although the advisability of the Society financing such a meeting was considered, the opinion prevailed that representatives of such local associations would feel more free to present their thoughts and discuss mutually interesting problems if they were present at the expense of their local organization. The Society will assume certain expenses of a general nature, and such expenses have already been authorized by the Executive Committee.

Fallen Timber to be Salvaged by Sale of Government Railroad

Sale of the government's spruce railroad, running into the heart of the Olympics on the Olympic Peninsula, from a point near Port Angeles, has been consummated, the purchasers being Fentress Hill, F. S. Scritsmeier and J. F. Lyon of Portland, and the price placed at \$1,000,000. The sale includes the big government sawmill and hotel at Port Angeles, considerable timber in Clallam County and all of the machinery of the government's dismantled spruce cut-up mill at Vancouver, Wash. A clause in the contract of purchase re-

quires the purchasers to expend in the rehabilitation of the properties at least \$200,000 within one year. The Clallam county railroad is about 36 miles long, running through heavily timbered country all the way, and was constructed during the war. It is in this timber belt that such heavy damage was done by the windstorm in January, 1921. Dispatches from Washington state that the purchasers of the line are willing to operate the railroad as a common carrier, which will permit private owners in the district to salvage considerable of the down timber that was felled during the great storm. Sale of the spruce railroad, with the consequent development, is expected to give a big stimulus to lumbering operations in Clallam county.

Pacific Power and Light Co. Starts Construction on Hood River

Construction work has been started on the new \$1,250,000 power plant of the Pacific Power and Light Company on Hood River. Two hundred and fifty men have been placed at work and 550 more are to be added. Two permanent camps have been established, one at Powderdale and another three miles up the river, where the dam and headworks will be built. The Phoenix Utility Company is in charge of construction. J. E. Shinn is superintendent.

Permission for Consolidation of the Reno Power, Light and Water Company and the Truckee River General Electric Company under the name of the latter concern has been granted by the Nevada Public Service Commission.

The million-dollar factory of the newly organized Durant Motor Company at Oakland, California, for the manufacture of a new motor car is expected to be ready to begin operations within the next sixty days. The plant has 300,000 sq. ft. of floor space and a capacity of 50,000 motor cars a year. It will furnish employment for approximately 1,000 men. The factory was built by the P. J. Walker Construction Company.

Seattle Faces Problem in Recent Street Railway Tax Decision

The City of Seattle will be responsible for three fourths of the 1919 tax bill on street car lines and the Puget Sound Power and Light Company for one fourth, if the recent decision of the supreme court of Washington is enforced. The sum involved is \$401,017 and the debt bears interest from the date of March, 1920.

The tax in question was levied by the state tax commissioner in 1919. The city and the company claimed the property was not subject to taxation for the year 1919 because the city acquired title March 31, 1919, and the state tax commissioner had no authority to make an assessment prior to April 1, 1919.

The city is in some difficulty in the matter, owing to the fact that no money is available from the city railway fund, the railways under city management having shown a deficit to date. According to a previous decision of the Supreme Court, recourse cannot be had to the general fund. It is understood that a plea for leniency will be made to the county commissioners.

The Puget Sound Company, on the other hand, announces its intention of paying the taxes under protest and of later carrying the matter to the Supreme Court of the United States.

Seven electric yarders and loaders recently installed by the Hutchinson Lumber Company, of Oroville, California represent the first electrically driven machines of this type to be put in operation in California and the second in the industry. They are used to replace the ordinary donkey engine of the lumber industry in dragging in logs and loading them on cars, etc. The total motor capacity is 475 horsepower, and power is supplied through local power lines. The machines are constructed by the General Electric Company and installed under the direction of their engineers.

Cooperative League Extends Activities in Colorado

According to reports from Denver, the Electrical Cooperative League of that city, which has just completed its first year of operation, is planning on extending its organization and activities throughout the state of Colorado.

A committee headed by John J. Cooper, general manager of the Mountain Electric Company, has been working on the development scheme for several weeks and it is understood that intensive development of the territory will be started immediately in accordance with the committee's report.

Extreme satisfaction with the first year's program, developed under the direction of S. W. Bishop, executive manager, has been maintained and the interest held in the movement is evidenced by the renewed support of the Denver jobbers, contractor-dealers and central station, and a large representation of the manufacturing interests.

The program of the activities for the second fiscal year has not been definitely established but it is known to include development of the electrical home idea in at least four Colorado cities. An industrial lighting exhibit, accompanied by a lecture course in improved illumination, is planned. The "electrify" movement in the Rocky Mountain region proper will be coordinated from the Denver headquarters of the League.

Wenatchee District to be Served by New 110,000-v. Line

The Puget Sound Power and Light Company, with head offices in Seattle, has begun construction of a 110,000-volt transmission line from one of its hydroelectric plants in the Puget Sound district to Wenatchee in Central Washington. The line will be 120 miles long, and will cost, with transforming and switching equipment, approximately \$800,000. It will deliver 30,000 horsepower of electric energy to existing local companies and power users, and will supply the general power needs of that section of central Washington. No new power plants will be required to furnish this large additional service, as the company has ample power plant capacity for all present and immediate future needs. The line will be built up Green River Gorge, following the Northern Pacific Railway, and passing through Easton, Cle Elum and other town in the upper Yakima Valley. S. L. Shuffleton, chief hydroelectric engineer, will have charge of construction.

A thirty-five year contract has been made with the Washington Coast Utilities Company, operating the Wenatchee properties, for their entire requirements for power supply, and the new line of the Puget Sound Power & Light Company will give an added impetus to the entire region, of which Wenatchee is the geographic and commercial center.

The Milwaukee electrification connects the transmission systems of the Puget Sound Power & Light Company and the Washington Water Power Company. The new Wenatchee line will make another interconnection possible if it is needed at some future time.

Seattle Surplus Power to be Sold to Industries at Low Rate

By an ordinance passed by the city council of Seattle, surplus power of the municipal light plant will be sold to manufacturers at a reduced rate. The bill provides for the sale of electric current produced over the regular demand, and which would otherwise go to waste, at \$1.12 a k.w. per calendar month. There is said to be a surplus of about 5,000,000 kilowatts per month during the high water season at Cedar Falls. Contracts under the above rate would be limited to five years.

Peru Exempts Materials for Public Utility Construction Work

In order to facilitate the extensive improvements planned by the Empresas Electricas Asociadas (Association of Electrical Companies) in the development of electric light, power, and traction services, the President of Peru has signed a law modifying their franchise and granting certain concessions, the most important being the following:

The period of time for the improvement of the electric railways from Lima to Callao and from Lima to Chorrillos is extended to 20 years. All material necessary for the construction and improvement of the installations of light, traction, and power will be exempt from import duty for a period of five years. Among the materials benefited by this reduction are: Ties, rails, locomotives, tanks, railway coaches, and various cars, nails, screws, hinges, telegraph wire and posts, and all other apparatus, and material which the Government may deem necessary for the construction work and new installations. The company shall also be exempt during the entire period of concession from any new municipal, Federal, or corporation taxes or charges that may be created during that time, and from any increase in the present taxes which may directly affect its income from the exploitation of the electric lighting and other improvements. This exemption does not apply to the profits which the company obtains from the exercise of its functions.

Governor Louis F. Hart of Washington has announced his intention of calling a conference of the governors of eleven western states in the near future for the purpose of considering problems of taxation. He is preparing to issue invitations to the chief executives of Oregon, California, Nevada, Utah, Arizona, New Mexico, Colorado, Wyoming, Montana and Idaho to meet at Sacramento, California, at a date to be announced later.

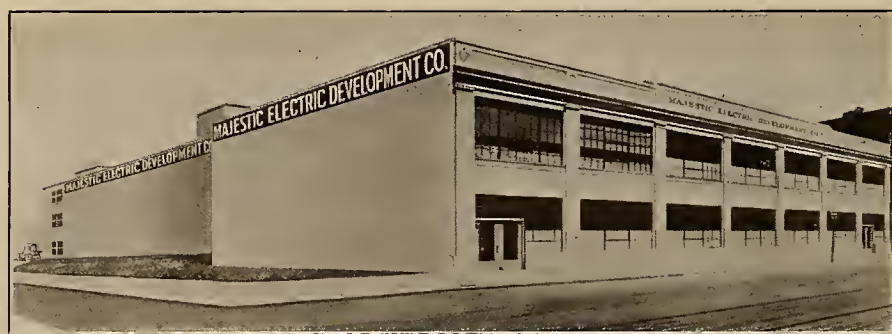
Utah Has Vast Hydroelectric Resources, Expert Avers

In a talk before the Kiwanis club at Salt Lake City recently, R. R. Woolley, hydraulic engineer of the United States geological department, stated that water power sites in Utah are capable of developing 1,800,000 horsepower. This estimate embraces sites on the Bear, Provo, Green rivers and other surrounding mountain streams. Approximately 200,000 horsepower is developed by the forty-six plants in operation, he said. All of the undeveloped sites are under government control. Mr. Woolley suggested a pumping station near the point where the Bear river enters Great Salt Lake. It would be possible to irrigate about 30,000 acres with this water which is less than one per cent salt as compared with the water on the opposite side of the Lucin cut-off at 20 per cent salt. A pumping station in the Provo River valley, he said, where lands are now waterlogged from the high spring freshets would water between 30,000 and 40,000 acres of land in Tooele county.

At the Great Northern Division offices in Everett, Wash., it is announced that freight yards in Bullington will be enlarged with an estimated cost of \$100,000. More than a mile of new track will be laid. Increasing freight business is given as the reason for the improvement.

Los Angeles Shipping Firm Gets Contract for Reconditioning

Contracts to the amount of \$200,000 for the reconditioning of the liners, City of Los Angeles and City of Honolulu, were recently awarded to the Los Angeles Shipbuilding and Drydock Corporation. Other work under way by this firm includes the construction of two double ended steel ferry boats for the Key Route system of San Francisco, the building of steel lumber schooners and the erection of a large lumber plant resulting from the combination recently announced between the Shipping Corporation and a British Columbia timber company.



FIRST UNIT OF SAN FRANCISCO PLANT OF MAJESTIC ELECTRIC DEVELOPMENT CO. New main office and factory of the Majestic Electric Development Company on Folsom St., San Francisco. The new factory which has been occupied since the first of May is more than four times the size of the previous quarters of the plant, occupying 125 front feet on Folsom Street, and extending through the block, of part two and part three-story construction. Even during the period of construction, the business of the company has grown, and it expected that within the next two years the quarters will be extended to cover the end of the block, as well as have additional stories added. Several new heating devices, among them a large household water heater and a new type of waffle iron have recently been placed on the market by this company, which is one of the few large concerns who have their headquarters and main factory on the Pacific Coast, with branches throughout the East.

Survey of Power Possibilities of Green River Under Way

For the purpose of determining power and reservoir site possibilities, a complete topographic survey of the Green river from Green River, Wyo., to Green River, Utah, is being undertaken. The work will taken between three and four months, and will be the first attempt to complete an actual survey.

The 300-mile river trip and a seventy-mile side trip down the Yampa river will be made in three specially constructed boats. Nine feasible dam sites, capable of an approximate production of 1,500,000 horsepower, will be investigated.

Most of the trip will be made between canyon walls of from 2,000 to 3,000 ft. A series of rapids and a number of waterfalls will occasion much portage. Canyons to be passed through are known as the Flaming Gorge, Whirlpool canyon, Red canyon, Swallow canyon, Lodore canyon, Split Mountain canyon, Desolation canyon and Gray canyon.

Boats to be used were designed by Colb brothers of Kanab, Utah. Both ends of the boats are watertight compartments, with a cockpit in the center of each boat.

The personnel of the party includes Ralf R. Woolley, hydraulic engineer of the United States geological survey; K. W. Trimble, chief topographer; two experienced boatmen who will act as rowmen, and expert boatman, a geologist, a cook, and H. L. Stoner, representing the Utah Power and Light company.

Second Electrical Home for Salt Lake City Planned for July

July 15th will mark the opening of Salt Lake City's second Electrical Home. While this display will not be as comprehensive as that of the first one, it is expected from a commercial standpoint that it will be of far more value to the electric industry locally on account of its great appeal to the majority of home builders—in that it is something which could easily be applied to any residence of moderate cost.

Over 38,000 announcement slips extending an invitation to the public of Salt Lake to visit the Home are being distributed through various channels and an active campaign is about to be started which it is hoped, will draw a record attendance of visitors.

Weather Change Improves Northwest Forest Fire Situation

Forest fire conditions which have been troublesome in the Pacific Northwest owing to an unusual dry period, are reported better, following general light rains and fogs during the first two weeks of July. Fires have been active in Tillamook county, Columbia county, Oregon and the Lake Chelan district and much damage has been threatened but it is hoped that this menace is now averted. Near Newhalem, the site of the Skagit river project of the city of Seattle, a destructive fire is reported to have destroyed three miles of railroad built beyond the power plant for carrying supplies to the dam and tunnels.

Proposed Bridge Over Carquinez Straits Protested at Hearing

The proposed bridge across Carquinez Straits for which an application for a permit was sought by the San Francisco Transit Company, has been taken under advisement by Colonel Herbert Deakyne, who represented the War Department in the hearing recently conducted. Considerable opposition developed from transportation companies and others who claimed that their interests would suffer. The proposed bridge would extend from Dillon's Point to Eckley and would cost \$2,500,000. It would be 3,000 ft. in length with a roadway thirty ft. wide, which would accommodate traffic from three highways.

The Central Mendocino Power Company has requested permission of the Railroad Commission to sell \$200,000 of stock and to use the funds to construct storage and diversion dams, pipe lines, power house, transmission lines and distribution system for furnishing power to the city and valley of Willits.

Constitutionality of the act providing for a levy of one mill tax by the general fund of the city, to create a guarantee fund for the benefit of the salability of special improvement district bonds, is upheld in a recent decision of the Utah Supreme Court. E. B. Wicks of Salt Lake City objected to the sale of bonds covering Lighting District No. 6, on State street, on the ground that the city had no right to use the general fund of the city to guarantee payment.

New Radio Company Erecting Factory in Salt Lake City

Nathaniel Baldwin, inventor of the famous Baldwin radio receiver and amplifier, has incorporated a new million-dollar company to be known as Nathaniel Baldwin, Incorporated, for the manufacture of radio apparatus. Associated with Mr. Baldwin in the company are David Neff, vice-president and treasurer; Lawrence Clayton, secretary; Seth Chamberlain, Ray Andrus, J. P. Fisher and Loren Wooley.

It is understood that while Nathaniel Baldwin, Incorporated will have full power to manufacture the apparatus and to grant licenses for the manufacture of apparatus under his patents, it is not now their intention to grant licenses other than that held by the Baldwin Radio company, a recently incorporated concern headed by David A. Smith, Lester D. Freed and Joseph F. Nibley, which is now erecting a modern factory for the making of parts in Holiday, a suburb of Salt Lake City.

The Utah Power and Light company has purchased the property of the Shelley Light and Power company of Shelley, Idaho, and will hereafter serve all territory formerly served by the Shelley company.

Alvadore Welch, of Portland, widely known promoter, financier and operator of public utility enterprises, has filed a petition of bankruptcy in the United States district court. Liabilities are listed at \$387,399.47 against assets of slightly over \$80,000. Although Welch's secured creditors hold claims aggregating \$228,641.53, he lists the total value of his negotiable stocks and bonds at only \$80,500.

The Weyerhaeuser Timber Company, Seattle and Everett, recently announced the gift to the state of Washington of 5,000 acres of cut-over land for reforestation purposes. The gift was made by George Long, northwest manager of the Weyerhaeuser properties. The Weyerhaeuser gift will undoubtedly be followed by similar announcements from other large timber companies. The object of the gift is to encourage reforestation. State authorities will make their selection of cut-over land, which they deem best for reforestation.



EDITORS OF CALIFORNIA VISIT THE PACIFIC GAS AND ELECTRIC DEVELOPMENT ON PIT RIVER

Sixty newspaper men were the guests of the Pacific Gas and Electric Company in an excursion to the Pit River development of the company over the Fourth of July. A group of the power men who acted as hosts is to be seen in the center picture. John A. Britton, vice-president and general manager of the company is seen at the end of the excursion train

at the left and Wigginton E. Creed, president of the Pacific Gas and Electric Company, appears against a background of the cottages at Pit Camp No. 1 on the right. The excursion covered all construction work of the main power project and concluded with an inspection of Vaca substation.

Meetings of Interest to Western Men

A. I. E. E. Convention Plans for Vancouver, August 8-11, 1922

Announcement of preliminary plans for the Pacific Coast Convention of the A. I. E. E. at Vancouver, B. C., August 8-11, is made by the Vancouver Section. Besides the outings shown on the program, ample facilities are available for boat trips and other entertainment features immediately following convention.

PRELIMINARY PROGRAM. A. I. E. E. VANCOUVER CONVENTION

Tuesday, August 8—

Forenoon—Address of Welcome by His Honor Walter Cameron Nicholl, Lieutenant Governor of British Columbia.

Address by Pres. Wm. McClellan.

High Tension Transmission of Power, O. C. Merrill, R. J. C. Wood.

Afternoon—Sight-seeing trip, Stanley Park and Marine Drive.

Golf

Tennis

5 p. m. Tea for ladies.

Evening—Little Stories of Engineering, G. Faccioli.

Pictorial Symposium of Power Plant Comparisons, stereopticon.

Wednesday, August 9—

Forenoon—An Overpotential Test for Insulators—G. W. Lapp.

Failure of Disc Insulators on High Tension Transmission Lines, Harrison D. Pantou.

Tests and Investigations in Extra High Tension Insulators from a Purchasing Engineer's Point of view, C. C. Farr, H. E. R. Philpott.

Luncheon conference, Institute officers and Section representatives.

Afternoon—Conservation of Human Material, J. W. Upp.

Coordination of Professional Engineering and College Training, E. E. F. Creighton.

Training to Think vs. Gathering Information, T. Milton.

Golf

Tennis

Evening—Outing to Capilano Canyon.

Thursday, August 10—

Forenoon—Exciter Instability, R. E. Doherty.

Electrical Characteristics of Transmission Systems, H. B. Dwight.

Experimental Investigation on Wind Pressure Upon Overhead Electrical Conductors, Shungo Furui.

A Graphic Method for the Exact Solution of Transmission Lines, C. H. Holladay.

Luncheon, for all.

Afternoon—An Address on Steam Railway Electrification, A. H. Babcock.

An Address on Research—C. E. Skinner.

Golf

Tennis

Evening—Official convention dinner (informal)

Friday, August 11—

Forenoon—The Development of Telephotography, D. W. Isakson, L. J. Leishman

Recent Conclusions Pertaining to Electrical Precipitation Process, G. E. Horne

Electrical Precipitation of Solids From Smelter Gases, R. B. Rathbun.

Golf and Tennis finals.

Afternoon and Evening—Boat trip to Hydroelectric Plant of the British Columbia Electric Railway Company at Lake Buntzen.

Boat will take party from Lake Buntzen to Wigwam Inn, Indian River for dinner, returning to Vancouver in the early evening.

1923 Ad Convention for Spokane

Spokane was selected as the 1923 meeting place for the Pacific Coast Advertising Clubs Association, which recently concluded a successful convention in San Diego. Officers for the new year are:

President, Thomas R. Keane, Spokane; Vice-presidents, for West Washington, John Condon of Tacoma, re-elected; for East Washington, Frank Beckman, Spokane; for Oregon, W. Kirkpatrick, Portland; for Northern California, R. A. Cleveland, Modesto; Southern California, Bert Butterworth, Los Angeles.

Salt Lake Dealers Reorganize

A reorganization of the Salt Lake Contractor-Dealers Association has recently taken place in an effort to stimulate renewed activity in that branch of the industry. The following officers are elected:

E. H. Eardley, president; G. R. Randall, vice-president; G. W. Forsberg, secretary, A. M. Sisam, treasurer; C. R. Dodge, fifth member Advisory Committee.

The new organization plans a weekly luncheon meeting at the Commercial Club, with speakers on interesting subjects, vital to the industry.

Plans for opening the intermountain development campaign, a movement to encourage patronizing home industries, on August 23, have been arranged by the Utah Manufacturers association. C. E. Arney of Seattle, who conducted a similar campaign in the Pacific Northwest, will arrive in Salt Lake early in August to take charge of campaign activities. The cooperation of civic clubs, schools and churches will be enlisted in the movement. The work will embrace not only Utah, but practically all states in the intermountain group.

Southern Idaho Convention Postponed

In order to accommodate speakers, the annual convention of the Southern Idaho Association of Electrical Contractor-Dealers, which was to have been held at Hailey, Idaho, on August 11-12 has been postponed until Aug. 25, 26, 1922. The entire southern portion of the state is represented in the membership of this organization and the convention committee reports that they are arranging an exceptionally good program.

Plans for the Pacific Northwest Merchants' Convention and Industrial Exhibit, to be held in Seattle July 24-29 are progressing rapidly and more than 35 per cent of the total exhibit space of 105,000 square feet has been contracted for by exhibitors. Tacoma and Seattle merchants are cooperating to stage the convention, and Tacoma will hold a convention of the Washington State Furniture Manufacturer's Association during the week.

The National Technical Section of the National Electric Light Association at its recent meeting at N. E. L. A. headquarters in New York determined upon the organization of the committee for the year. The principal recommendation adopted was that each local division organize committees comparable to those existing in the national section to the extent deemed necessary in that division. The chairman of each of these division committees will automatically become a member of the corresponding national committee.

It was resolved to hold three group meetings of the section during the ensuing year; the first, approximately in September at some middle west point, the second one approximately in November at a western or southwestern point, and the third in January in New York or other eastern point.

L. M. Klauber, San Diego Consolidated Gas and Electric Company, was appointed chairman of the national committee on Overhead Systems.

Laurence W. Davis, special representative of the National Association of Electrical Contractors and Dealers, together with Kenneth A. McIntyre of the Society For Electrical Development is to spend August and September in an extended western trip. Mr. Davis in his talks before the electrical industry will cover the subject of "Building the Business of the Electragists Through Association," while Mr. McIntyre will talk of the work of the Society under the subject, "Publicity by Cooperation." The itinerary as planned is as follows:

Dates in Cities	Cities
July 31 — Aug. 1-2	Winnipeg, Manitoba
Aug. 3-4-5	Regina, Saskatchewan
Aug. 8-9-10	Calgary, Alberta
Aug. 14-15	Vancouver, B. C.
Aug. 16-17	Victoria, B. C.
Aug. 18-19	Seattle, Wash.
Aug. 21	Tacoma, Wash.
Aug. 22-23	Portland, Ore.
Aug. 25-26-27	Hailey, Idaho
Aug. 31—Sept. 1-2	Salt Lake City, Utah
Sept. 5-6-7-8	San Francisco, Cal.
Sept. 11	Fresno, Cal.
Sept. 12 to 16	Los Angeles, Cal.
Sept. 19	Phoenix, Ariz.
Sept. 20	El Paso, Texas
Sept. 21-22	Albuquerque, N. M.
Sept. 23	Pueblo, Colo.
Sept. 24-25	Colorado Spr'gs, Colo.
Sept. 26-27-28	Denver, Colo.
Sept. 29-30	Kansas City, Mo.

COMING EVENTS

PACIFIC COAST DIVISION, AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS

Annual Meeting—Vancouver, B. C.—August 8-11, 1922

PACIFIC COAST DIVISION, NATIONAL ELECTRICAL SUPPLY JOBBERS' ASSOCIATION

Quarterly Meeting—Del Monte—August 3-5, 1922

CALIFORNIA STATE ASSOCIATION OF ELECTRICAL CONTRACTORS AND DEALERS

Annual Convention—Santa Cruz—August 17-19, 1922

SOUTHERN IDAHO ASSOCIATION OF ELECTRICAL CONTRACTOR-DEALERS

Annual Convention—Hailey, Idaho—August 25-26, 1922

INVESTMENT BANKERS ASSOCIATION OF AMERICA

Annual Convention—Del Monte—October 7-11, 1922

H. L. Melvin, electrical engineer in the engineering department of the Washington Water Power Company, has been elected chairman of the Spokane section of the American Institute of Electrical Engineers for the coming year. Prior to coming to Spokane in 1920, Mr. Melvin was in the engineering department of the Utah Power and Light Company in Salt Lake City. He was graduated from Washington State



H. L. MELVIN

College in 1911 and immediately entered the testing department of the General Electric Company. He received a master's degree from the Massachusetts Institute of Technology in 1917. From 1912 to 1916 he was an instructor in electrical engineering in Washington State College. During the past year he has been secretary-treasurer of the Spokane section of the A. I. E. E.

Dr. J. W. Turrentine, formerly director of the experimental kelp-potash plant of the U. S. Department of Agriculture at Summerland, Cal., has obtained a furlough from the department for a period of six months to act as consulting chemist for the U. S. Kelp Products Corporation, the newly organized concern which has purchased the plant from the government.

Floyd Averill, general manager, Fobes Supply Company with headquarters at Portland, Oregon, is a recent San Francisco visitor.

Tracy E. Bibbins, president of the Pacific States Electric Company, is again in his San Francisco headquarters after having taken an active part in the sessions of the Northwest Electric Light and Power Association at Boise, during which he addressed the Rotarians and other citizens of Boise on the duty business men owe to their communities to see to it that pernicious legislation against the power industry be headed off whenever it may appear in the several commonwealths of the West.

W. S. Berry, San Francisco sales manager of the Western Electric Company, and E. O. Shreve, San Francisco manager of the General Electric Company, are again back at their Pacific Coast headquarters after a visit of several weeks in Eastern business centers.

John Greenawalt of the Mountain States Telephone and Telegraph Company, and George W. Bixler of the Denver Gas and Electric Light Company, attended the Associated Advertising Clubs convention in Milwaukee recently.

Personals

E. H. Waddington, western district line material manager of the Western Electric Company, Inc., is making his headquarters temporarily in Denver while his family is located for the summer in the nearby mountains.

John Rosseter, for many years president of the Sperry Flour Company, has resigned from that position to devote his time to his private interests. Mr. Rosseter has been a prominent figure in industrial and shipping circles on the Pacific Coast for many years. He was first connected with the firm of W. R. Grace and Company, later becoming Pacific Coast manager. He also became connected with the Pacific Mail Steamship Company as vice-president and general manager. During the war he served as director of operations for the United States Shipping Board.

G. O. Muhlfeld, director of engineering of Stone and Webster, Inc., returned from the Orient recently on the Steamer Siberia Maru. Mr. Muhlfeld was in the Orient on business, his company having charge of several hydroelectric installations in the Far East.

W. L. Morine, electrical engineer of Portland, is a recent San Francisco visitor.

J. W. Hackett, sales engineer for the Okonite Co., manufacturers of insulated wires and cable, is returning to New York after spending considerable time on the Pacific Coast opening a Western sales headquarters for the company. S. Herbert Lanyon has been appointed western manager for the company and will maintain offices as in the past in the New Call Bldg., San Francisco.

Alfred D. Flinn, secretary of the Engineering Foundation and Chairman of the Division of Engineering of the National Research Council, is now engaged in a several weeks' tour of the West, during which he will address gatherings of engineers in all of the principal cities of this district. Mr. Flinn goes as the emissary of organized research to enlist the aid of engineers of the far West in a nationwide plan of industrial research in which the Foundation, the Council, government departments and the industries will link their efforts. A big research highway program and the movement to drive the shipworm from American ports, in which it has caused billions of damage, are among the projects explained by Mr. Flinn, whose itinerary has already included Salt Lake City, Los Angeles, San Francisco, Sacramento, Riverside and Davis, California, and will extend to Portland, Seattle and Bellingham, Vancouver, B. C., Prince Rupert, Jasper Park, Alta and thence on East.

Frank D. Fagan, vice-president and general manager of the Edison Storage Battery Company, of Orange, New Jersey, has recently made an extensive business trip throughout the western territory. While in San Francisco, Mr. Fagan was the guest at a "welcome home" dinner, given him by his old associates and business friends in the electrical industry of that city.

A. E. Morphy secretary of the Southern California Edison Company, has resigned to become secretary-treasurer of the Pacific Gasoline Company. Clifton Peters, assistant secretary, was advanced to the position of secretary. Mr. Morphy has been with the Edison Company for fifteen years, entering its employ as a clerk in the auditor's office. When the United States went to war, he was one of the first to volunteer, retiring at the time of the armistice with the rank of Captain.

Mr. Wynn Meredith, California partner of Sanderson & Porter, who returned from an extended trip to New York early in June, has spent the past week examining the hydroelectric power projects of the Yosemite Power Company on the Tuolumne River.

Fenwick M. Thebo, president of the engineering firm of Thebo, Starr & Anderson, Inc., of San Francisco, engineers and constructors, has recently had conferred upon him the degree of Master of Arts by Union College at Schenectady, N. Y.

Markham Cheever, general superintendent and chief engineer of the Utah Power & Light Company of Salt Lake City, was a recent San Francisco visitor.

E. P. Markee, district manager of the Edison Lamp Works has left to attend the Sales Managers meeting of that company at Association Island, New York.

M. P. Maxwell, eastern sales manager of R. Thomas & Company, manufacturers of high tension porcelain insulators, is in Los Angeles working with their agents, the Western Electric Company.

A. R. Heywood, president of the Utah Public Utilities Commission, recently attended a conference of western public utility commissioners in San Francisco, called by the California Railroad Commission for the purpose of considering



A. R. HEYWOOD

the Supreme Court decision severing the Southern Pacific and Central Pacific Railroads. Mr. Heywood was a former mayor of Ogden and has long been associated with commercial and professional interests in the Intermountain district. He reports well of business conditions in Utah, which he says, are fast coming out of the period of business depression which followed the war.

K. E. Van Kuran, local district manager of the Westinghouse Electric & Manufacturing Company, has left for a two weeks' trip to the mining districts of Arizona and expects to cover the entire state.

Herbert S. Evans, dean of the engineering department of the University of Colorado, has been elected a member of the executive council of the Society for the Promotion of Engineering Education.

J. H. Cunningham, sales manager of the General Electric Company's Los Angeles office, has just returned from a trip to the General Electric factory at Schenectady, New York.

Frank van Gilluwe, lighting specialist of the Los Angeles office of the Western Electric Company, left recently for the Sunbeam Lamp Conference at Nela Park.

J. David Houser, whose article on personnel work appears on another page of this issue, is associated with three other university men in the enterprise which is known as the Bureau of Management Research. Wilford E. Talbert and Frank A. Scofield had been occupied with the direct problems of industrial and commercial organizations along the lines of personnel administration, Talbert as assistant director of the Bureau of Personnel Research at the Carnegie Institute of Technology and Scofield as a supervisor in corporation schools. Charles C. Stech and Mr. Houser had been engaged in personnel work in the service during the war, and the tremendously interesting experiment in classifying and placing men according to scientific methods had led them to believe that the same successful methods ought to be of great service in industrial personnel work. From the first there have been two aspects to the work. The first has been the public aspect—service to the community through spreading the gospel of better industrial relations. The second has



J. DAVID HOUSER

been the direct service aspect for individual organizations. The men who encouraged the work at the beginning felt that the industrial relations tone of a community was merely the sum total of the conditions in the separate industries, and that only as these conditions were improved through better personnel administration in individual industries would the entire situation be improved.

T. E. Holsey, formerly with the Washington Water Power Company, of Spokane, is now connected with the Los Angeles sales organization of the Western Electric Company.

William D'Arcy Ryan, head of the illumination Research Bureau of the General Electric Company, was a guest of the Denver electrical fraternity on his return to the East from Salt Lake City, where he completed arrangements for the installation of the lighting effects to be featured during the coming electrical exposition in that city in October.

M. H. Aylesworth, executive manager of the National Electric Light Association, and E. A. Phinney of the Jefferson County Power and Light Company and formerly president of the Rocky Mountain division of the N. E. L. A., spent the last week in June on a fishing expedition in North Park, Colo.

D. C. McClure, electrical superintendent of the Denver Gas and Electric Light Company, is making a tour of inspection of eastern central station properties.

Thomas F. Kennedy, for a number of years commercial manager for the Western Light and Power Company, has been transferred to the New York office of the Doherty Company to serve as assistant to George Williams, manager of the new business department. His place has been taken by E. B. Ball, who will make his headquarters at Boulder.

D. W. Proebstel, operating instruction engineer of the Portland Railway Light Power Company, and chairman-elect of the Portland Section of the American Institute of Electrical Engineers, is attending the annual convention of the Institute at Niagara Falls, Ontario, as the official delegate of the Portland Section.

F. R. Whittlesey, former secretary of the Oregon Association of Electrical Contractors and Dealers, and more recently field man for the Northwest Electrical Service League in Oregon, has left the services of the League and is now in the range sales division of the Portland Railway Light & Power Company.

A. S. Moody, Northwest manager, Supply Division of the General Electric Company at Portland, has left for a business trip to the East which will include a visit to the General Electric Company's factory at Schenectady.

O. B. Coldwell, vice-president of the Portland Railway, Light & Power Company, attended the National convention of the American Institute of Electrical Engineers, and is visiting the important business centers while in the East.

William Von Phul, president and general manager of the Market St. Ry. Co., has resigned to give his entire attention to Ford, Bacon & Davis, Inc., of which he is president and whose interest will require his continuous presence in New York. Colonel C. N. Black, vice-president of Ford, Bacon & Davis, Inc. has been appointed to succeed Mr. Von Phul as president and general manager of the Market St. Ry. Co. Mr. Black, who is well known in the electric railway industry, was president of the American Electric Railway Association in 1915 and was at that time vice-president and general manager of the San Francisco system, then called the United Railroads.

G. E. Armstrong, who has been the Pacific Coast Editor of the Electrical World for the past two years, has resigned to become the representative in Los Angeles of the Garland Affolter Engineering Company, manufacturers' agents. Mr. Armstrong was of the 1914 Class of the University of California and immediately upon leaving college he entered the employ of the Southern California Edison Company



G. E. ARMSTRONG

as assistant to the superintendent of generation. Later he was superintendent of transmission and then protection engineer and assistant to the chief electrical engineer. Mr. Armstrong is widely known through his technical writings and his activities in the technical and other electrical societies. He has served on numerous committees of the American Institute of Electrical Engineers and the Pacific Coast Electrical Association. For many years he has been a member of and secretary of the technical committee of this association. Upon leaving the Southern California Edison Company he was associate editor of the Journal of Electricity and Western Industry until he was given the position on the staff of the Electrical World.

Obituary

J. F. Blaschke, at one time with the Mazda Service Bureau at San Francisco and more recently editor of the Stimulator and in charge of the advertising of the Ivanhoe-Regent Works of the General Electric Company, died recently at his home in Cleveland.

Samuel Naphtaly, vice-president of the Great Western Power Company of San Francisco, and who has been associated with the electrical development of the West for many years, died recently in San Francisco following an illness of some months. Aside from his accomplishments in the electrical industry of the state, Mr. Naphtaly was widely known for his connection with the Oakland and Antioch Railway, of which he was the founder and first vice-president. He was also the organizer of the Los Angeles Shipbuilding and Drydock Company of San Pedro.

The Rome Wire Company, Rome, N. Y., has purchased all of the equipment and inventory of the Toledo Enameled Wire Products Company of Toledo, Ohio, and intends to install this equipment in its main plant as soon as possible. The purchase of this equipment by the Rome Wire Company will considerably increase the firm's production. The company reports that the volume of magnet wire business has considerably increased during the last few weeks and that motor business has also increased during May and June.

C. C. Callicott has opened the Callcott Electrical Company in the Jernigan Building at Clovis, New Mexico. The new store will handle a complete line of electrical appliances.

The Ackurate Rubber Company, Passaic, N. J., announces the appointment of the Engineering and General Supply Company, Los Angeles, as direct factory branch agents for California and Arizona, to handle the various lines of tape manufactured by it. The company also announces that district sales offices will be established throughout the West, the exact locations of which will be announced later.

The Rutenber Electric Company, Marion, Indiana, manufacturers of the "Marion" line of appliances, has placed on the market a new and efficient iron equipped with a "handle that fits the hand." The handle is a radically new idea both in construction and appearance.

The P. E. Chapman Electrical Works, St. Louis, Mo., has issued bulletin No. 101, describing the motor driven taping machine for taping armature and field coils. The machine embodies a number of new ideas including a slow speed motor, a cone clutch giving instantaneous and fine adjustments in speed, and an automatic brake.

The Ohio Brass Company, Mansfield, Ohio, has perfected two new arc weld bonds for electric railway service. The bond consists of steel terminals attached to twisted copper strand wire. The steel protects the copper from the heat of the arc and from molten welding metal.

The Roller-Smith Company, New York, manufacturers of electrical instruments, meters and circuit breakers, has recently issued Bulletin No. 820 describing its type "PV" ammeters and voltmeters and type "COD" indicators. The instruments were designed fundamentally for automotive vehicle use but are applicable for a wide range of other uses.

The Electric Furnace Construction Company, Philadelphia, Pa., has recently issued a bulletin describing the "Electro" steam generator. The bulletin cites a number of plants in which the steam generator has been installed and describes its various features. The company has also issued a bulletin describing the various types of electric furnaces for melting, refining and superheating iron and steel.

The Northern Equipment Company, Erie, Pa., has just issued a booklet, "Regulating Boiler Feed Water," which briefly and thoroughly covers the subject of boiler feed water regulation. A liberal use of charts and photographs has been made which aid in the graphic presentation of the subject.

The Colin B. Kennedy Company, San Francisco, has just issued Radio Bulletin C-3 describing the various types

Manufacturer, Dealer, and Jobber Activities

of radio equipment manufactured by that company. The book carries an attractive cover in colors and is well illustrated.

The Pelton Water Wheel Company, San Francisco, has just issued a new 16-page illustrated booklet entitled "The Kern River Number Three Plant of the Southern California Edison Company," written by Ely C. Hutchinson, general manager of the company. The hydraulic prime-mover equipment for this plant is especially notable, since it comprises two 25,000-hp. Pelton vertical turbines operating under a head of 810 ft., the highest head reaction turbines in the world. Copies of the booklet may be obtained at either the San Francisco or New York offices of the company.

The Economy Fuse and Manufacturing Company, Chicago, announces the appointment of Charles H. Bluske as district sales manager of the Los Angeles office. Mr. Bluske was formerly connected with the Pacific States Electric Company and succeeds George L. Davis.

The F. W. Wakefield Brass Company, manufacturers of red spot lighting specialties, announces that plans are now under way for enlarging their factory at Vermilion, Ohio. The company reports that substantial increase in demand for both commercial lighting fixtures and automobile spotlights makes necessary the additional manufacturing facilities.

Al's Illuminating Store is the newest electric store at Baker City, Oregon. F. A. Shultz and F. L. Robinson, both of La Grande, are the proprietors.

The Westinghouse Electric and Manufacturing Company has issued circular No. 4484 illustrating meter service switches. The switches are designed to meet every condition encountered by central stations in supplying service to homes and apartment houses and can be used in conjunction with standard makes of meters or independently.

The Intermountain Sales Company of Denver, of which E. L. Trowbridge is manager, has become a member of the Electrical Cooperative League in that city.

The George D. Roper Corporation of Rockford, Ill., has entered the electric appliance field with a radically different type of electric range which applies the principle of heat conductivity instead of radiant heat. The hot plate is made of a series of one-ampere units arranged in parallel with a maximum capacity of 25 amperes. Economy of operation and low maintenance cost due to the long-life heating elements are among the features claimed for the new product.

The Edison Storage Battery Company has recently issued a comprehensive booklet on storage batteries for gasoline truck lighting, in which it indicates that Edison equipment has a longer life of useful service than gasoline trucks themselves.

The Electric Heating Company of Tacoma recently received an order from the Indian Engineering Company of Bombay, India, for electric water heaters. The company, which is headed by W. D. Ludwick, has met with much success in the manufacture of electric water heaters and other heavy electric heating apparatus.

R. S. Willoughby, dean of Denver contractors, has taken over the Wesco Electric Supply Company, manufacturers' agents, carrying warehouse stocks in that city. O. P. Willoughby, his son, will be in charge.

The Hendrie and Bolthoff Mfg. and Supply Company, of Denver has made arrangements through W. B. Milliken of the Gillespie Eden Corporation to represent that company in the Rocky Mountain territory.

E. A. Daniels of the Isko Refrigerating Company with headquarters in Chicago, recently visited Denver and assisted O. S. More, representative in that city, in securing a number of commercial installations.

The Crooks-Nathan Household Appliance Company has been designated by the American Radiator Company as exclusive representative in Denver of the Arco Wand line of stationary and portable vacuum cleaners.



Whenever you see the picture of a man with a cigar in his mouth, you know it is either U. S. Grant, Barney Oldfield or Dave Harris of the Pacific States Electric Company, San Francisco. "Coats off" seems to be the distinguishing mark of A. E. Holloway, superintendent of the commercial department of the San Diego Consolidated Gas and Electric Co. Except for the fact that he is golfing and not fishing, we would presume that the "Doc" has just caught a grasshopper which he is holding in his right hand. Perhaps that explains the ticklish smile.

Business Outlook in Western Market Centers

Reflecting the Trend of Community Thought on Conditions and Events Affecting Business and Industrial Activities Throughout the West

Compiled and edited for the Journal of Electricity and Western Industry by correspondents in all principal Western cities.

SAN FRANCISCO

Although some slight echoes of the business depression through which the entire country has passed are still heard in the failure of occasional small manufacturers and importing concerns, whose extended credit was not sufficient to effect a permanent recovery, conditions on the whole are reported good. There is none of the customary lull in business which is usually a condition of the early summer season.

Sales of electric power reported by the power companies show an increase in the industrial use of electricity, a condition which is supported by a recent survey of the San Francisco district which shows 102 new factories in that city since the first of the year.

Building construction continues active. From the standpoint of real estate transactions, the period since the first of the year is reported as the most active in the history of San Francisco, property to the value of \$70,581,377 having changed hands, in comparison to \$39,045,472 during the corresponding period of 1921.

PORTLAND

Portland's records in building, banking, shipping and in the lumber industry established during the first six months of this year indicate a very healthy business and a gradual return to normal conditions. Value of building permits increased 53 per cent, bank clearings showed a healthy gain and the business of the port is the greatest since 1913. Production in the lumber industry has been from 5 to 15 per cent above normal for 6 to 8 weeks past, with new business equal to and in most cases exceeding production. Crop conditions throughout this section are good. Unemployment has long ceased to be a factor.

Conditions in the electrical industry are better than they have been for some time. Central stations are spending millions in extensions and improvements. Jobbers report business good and contractor-dealers are doing a fine business in wiring and fixtures as a result of the great building activity.

SEATTLE

Increasing activity in all industrial lines, slight advances in wages, and vastly improved employment situation throughout the state, are features of a recent business survey of the Puget Sound country.

Payrolls of Seattle and Northwest industrial plants are markedly larger at present, according to figures from the district supervisor of the State Department of labor. The greatest increase

in employment is in the logging camps, shingle mills and sawmills, and in plants producing building materials.

Revival of fishing and mining industries throughout the district is gratifying. The demand for men for Alaskan canneries has been heavy and the shipments of materials and supplies to the far north far exceeds that of last year, to date.

The conditions in the lumber industry show continued improvement, with demand for lumber products very heavy. Wage increases have been announced in practically all of the large lumber sections.

Retailers and dealers report a very encouraging demand for electrical appliances during the month of June.

SPOKANE

A dry season is responsible both for a somewhat diminished winter wheat crop and damaging forest fires. In consequence, the sale of agricultural implements and allied departments of business is somewhat below normal. Spring wheat, however, is expected to redeem this situation and the outlook for the late summer and early fall is considered better than last year. Berries and small field crops show an increase over 1921 conditions.

Lumber mills are very active and in spite of extra shifts are reported unable to keep up with weekly orders. Unemployment is reported at the minimum.

Retail trade is slightly under that of last year in almost all fields, but improvement is shown over the previous month.

Building construction is active, building permits amounting to almost double the value for the corresponding period of 1921.

SALT LAKE CITY

Of immense importance to the industrial situation in the intermountain section is the announcement of the organization of the Columbia Steel company, a \$15,000,000 corporation headed by California and Utah capitalists, to exploit the enormous iron deposits in Iron county, Utah, and some of the coal fields in Carbon county.

Industrial activity in this section is continuing to increase. Announcements of material reductions in the freight rates on ores mean another impetus to the rapidly increasing mining activities in this section.

The outlook for the sugar beet industry, both for the farmer and manufacturer, is brighter this year than for several seasons. Although the acreage is lighter, beets are in greater abundance and more healthy. General crop conditions are good.

Electrical dealers, jobbers and retail merchants in general report business improving.

Money is easier, and collections are better than for some time past.

Building activity continues at a healthy pace, and new construction is showing remarkable increases in volume, particularly in Salt Lake City, both over the previous month and the corresponding period of last year.

The unemployment situation is practically cleaned up. The large majority of unemployed men at present are those who are out because of strikes.

LOS ANGELES

There were 22,257 building permits issued in January 1st to June 30th inclusive for a total of \$59,459,250 which represents an increase over the corresponding period of the year 1921 of approximately 75 per cent. For the month of June 1922, there was a total of 3751 permits issued for a total of \$10,652,265, an increase over June 1921 of approximately 50 per cent. Bank clearings for the month of June were \$433,837,978, showing an increase of approximately 25 per cent over 1921.

Agricultural and livestock conditions in the Pacific Southwest show continued improvement, with consequent increasing optimism on the part of the producers. Better growing conditions, comparatively steady markets and continuing ease of credit have been largely responsible for this condition.

The sale of electrical appliances during the month of June, both wholesale and retail, showed a material increase as a result of the June Bride Campaign.

DENVER

Conditions in this part of the country are somewhat unsettled, owing to the strike of the railroad shop mechanics.

Building operations in Denver during the first six months of the year were nearly doubled over the similar period in 1921. During June, permits to the amount of \$1,815,700 were taken out, totaling for the first six months \$9,232,000 as against the 1921 figure of \$4,948,675, or an increase of \$4,283,325.

Reports from the agricultural districts indicate improved crop conditions. Fewer failures in business have been recorded recently. Industrial conditions are fast reaching normal.

Optimism still pervades banking circles and is evidenced by increases in loans, both in number and amount, for financing new business.

Dollar values in wholesale trade are larger than last year, according to the Federal Reserve bank, but electrical merchandise is still moving slowly, along with dry goods and drugs.

Construction News and Industrial Developments

Suggesting to the Engineer, Contractor, Manufacturer, Dealer, Agent and
All Business Men Opportunities for New Business

Bridges

Cal., Colusa—Contract for the motorization of the Colusa bridge over the Sacramento River has been awarded to Jenkins & Wells of Sacramento, whose bid was \$13,825.

Colorado, Denver—The state highway department has awarded contracts for bridges, as follows: St. Charles river, east of Pueblo, \$61,263; Sand Creek, near Brighton, \$9,914; Breckenridge creek, north of Ordway, \$3,261; Eleven timber bridges, Lincoln county, \$37,737.

Ore., Salem—The State Highway Commission has awarded construction of a bridge over Elk creek at Drain, to Albert Anderson of Grants Pass at \$13,527; bridges in Grant county near Dayville, to Lindstrom & Feigensen of Portland at \$33,051.75.

Ore., Eugene—Eleven bridges have been marked for repairs or replacement on the Sinslaw road, according to J. W. McArthur, county bridge superintendent, who has returned from a trip to the coast. The bridges are all on the old military road, except one which will come on the Rainrock-Blachly highway.

Wash., Yakima—A steel bridge to replace the wooden structure across the Yakima river at Parker will be built this year by the O. W. R. & N. Co., the cost to be about \$250,000.

Wash., Seattle—The Board of Public Works will receive bids August 4 for the erection of the superstructure of the Spokane Street bridge, estimated to cost \$1,250,000. Bids provide for the construction of the double-leaf bascule span, 288 ft. center to center of trunnions, two approach spans each about 140 ft. long, and a steel girder span 136 ft. long. The bascule span will be 45 ft. wide. Involved in the construction are 3,760,000 pounds of structural steel, 351,000 lb. of machinery, and 8,570 yd. of concrete.

Wash., Seattle—The Reliable Iron & Wire Works 3028½ Western Ave., has been awarded the contract for the installation of crossing towers for the Spokane St. bridge across the west waterway at Riverside.

Buildings (Industrial)

Cal., San Francisco—The San Francisco News Co., is planning the erection of a two-story brick manufacturing building, at the southwest corner of Hawthorne and Howard Streets, to cost \$75,000.

Cal., San Francisco—The Indiana-Pacific Motor Truck Co. will erect an assembling plant here, according to C. M. Menzies, western district manager.

Colorado, Denver—A four-story addition to the Merchants Biscuit Company will shortly be started at a cost of \$113,000. The factory capacity will be doubled and the new machinery and equipment required will aggregate close to \$75,000.

Ore., Portland—A permit has been issued to the Concrete Pipe Co., Board of Trade building, to erect a two-story factory, 120 x 114 ft. costing \$20,000, at 162 Page street, between Albina avenue and Kirby street.

Ore., Portland—A building permit was issued to the Hauser Construction Co., to erect a two-story factory, 81 x 351 ft. costing \$80,000, at 1749 Albina avenue between the Columbia boulevard and the O. W. R. & N. right of way, for the Columbia Tire Corporation. Rasmussen,

Grace Co., engineers, Chamber of Commerce building, prepared the plans.

Ore., LaGrande—The new one-story brick factory for the LaGrande Construction Co. is expected to be completed within two weeks, according to C. E. Harris and H. P. Neilson, members of the firm, who have charge of the work. The new factory is being built on the site of the former buildings at the corner of Greenwood and Madison.

Wash., Seattle—The plant of the Seattle Suitcase Trunk and Bag Company will be doubled, according to A. J. Kotkins, president, who recently returned from a six weeks' trip east to purchase machinery.

Wash., Tacoma—The Roman Meal Company has announced plans for the construction of a manufacturing plant to cost \$60,000, for the manufacture of Roman meal. Site has been selected and purchased.

Wash., Aberdeen—The Marine Equipment Company has purchased a large site between Aberdeen and Hoquiam, on which will be erected a new factory to cost \$275,000. Construction will begin in August on the first buildings, which will be fireproof construction.

Wash., Spokane—The Potlatch Lumber Company is constructing a lumber manufacturing plant here to cost \$100,000. Plant will be electrically equipped.

Wash., Bridgeport—Mr. and Mrs. R. L. Moorhead and J. J. Farrell are planning to erect a \$250,000 plant in Pateros for cold storage and car icing. It would have a capacity for 1000 cars of fruit in addition to room for other perishable products.

Buildings—Miscellaneous

Ariz., Phoenix—The contract for building an artillery armory at Mesa has been awarded to S. B. Shumway at \$22,000. The building will be of brick and completion is specified at 90 days. Bids have also been received for the Phoenix State Armory but the contract has not yet been awarded.

Cal., Manteca—Packing House—The Central Pacific Railway has been granted permission to erect a packing shed on the right of way of the railway company northwest of Main street and south of the railroad tracks. The shed is to be 20 ft. in width and 200 ft. in length.

Cal., Los Angeles—Apartments—Russell and Alpaugh, architects, have completed plans for a four-story and basement Class C apartment house to be erected at the northeast corner of Seventh and Catalina streets for Mrs. O. I. Low and Arthur Bard. The cost of the structure is estimated at \$250,000.

Cal., Stockton—Apartments and Stores—Contract for the erection of a three-story apartment and store building on the northwest corner of California and Lafayette streets, has been awarded to H. E. Vickroy on a bid of \$54,000.

Cal., San Francisco—Memorial—L. P. Hobart recently won the competition for the best design for the Hawaiian \$250,000 war memorial which is to take the form of a temple of music and a natatorium to be erected at Waikiki Beach, Hawaii, T. H. Bids for construction will be called for at an early date.

Cal., Long Beach—Salesroom—E. A. Green, Franklin dealer, will erect a \$50,000 salesroom at 6th and American streets.

Colorado, Denver—Auto School—The Johnson Automotive Trades school is building a new home for what is said will be the largest automobile school west of Kansas City. It will include a modern automobile and machine shop and will cost in the neighborhood of \$100,000.

Colorado, Denver—Restaurant—A two-story restaurant building to cost \$150,000 will be built at 17th and Glenarm Street by Adolph Trachsel and Otto Hebestreit.

Colorado, Denver—Commissary—An addition to house the dining hall and kitchen at Regis College, to cost about \$50,000 exclusive of equipment is planned.

Colorado, Denver—Garage—The Harrison Motor Company has completed plans for a \$30,000 brick garage to be built close to the downtown section.

Colorado, Denver—Hospital Additions—Additions to the Mercy and Osteopathic hospitals totaling \$80,000 will be built immediately, according to the governing boards of those institutions.

Colorado, Denver—Shop—Nathan Bros., one of the oldest tailoring firms in this city, has purchased the old Rust mansion at 1528 Lincoln Street and will shortly remodel it at a cost of \$40,000. According to Louis Nathan, innovations in lighting, heating and ventilating will be introduced, making it one of the best equipped institutions of its kind in the west.

Idaho, Caldwell—Theater—E. W. Waddell, of Nampa, Idaho, owner of the building bearing his name which houses the Liberty theater, intends to erect another theater here. The contemplated building is to be one story high and will cover a space 60 by 100 ft. An early start on the construction is promised.

Ore., Astoria—Hospital—Architect Hicks of this city has been selected to prepare plans and specifications for the new \$200,000 Fraternal Hospital to be erected at Sixteenth and Franklin Ave. The property is 200 x 200 ft. in size and was recently purchased by the Fraternal Hospital Assn.

Ore., Portland—Church—A new church is being planned by the members of the Rose City Park Methodist Episcopal church, the cost of which will be about \$50,000.

Ore., Portland—School—Work will start the latter part of July on a new \$50,000 building to be erected for St. Peter's Parish in Lents, at the corner of 87th Street and Foster Road.

Ore., Portland—Store—Claussen & Claussen, architects, are preparing plans for a 50 x 100 ft., 8-story store and specialty shops for I. Holsman. The building will be erected at Third and Alder Streets. It will be of reinforced concrete and will cost about \$175,000.

Ore., Portland—Club—Work has been started on the new \$200,000 Oddfellow's temple to be erected at Tenth and Salmon Streets.

Ore., Portland—Commercial—A permit has been issued to A. C. Myers, to erect a two-story building at 361 Hawthorne Ave., between East 3rd and Grand Avenue, for Howard Cooper & Company, 250 East Water Street. It will be 95 x 100 ft., costing about \$30,000.

Ore., Roseburg—Apartments—Work has started on the Kohlhagan apartment house, being

constructed by George Kohlhagan, a local merchant. This structure, which is to be built of reinforced concrete, will be Roseburg's first large apartment building and is to cost approximately \$125,000.

Wash., Chehalis.—Church—Plans for the construction of a new St. Johns church, parish house and school, to be located on Cascade avenue, between 6th and 7th streets, are being prepared by Hill, Mock & Griffin, Chehalis and Tacoma architects, and it is planned to begin the buildings under contract this summer. It is expected that the buildings will cost \$40,000.

Wash., Seattle—Apartments—Contract for the L. C. Trouthon apartment house, to cost \$225,000 has been awarded to the The Pacific States Construction Company, Seattle. Structure will be six stories high containing 63 two-room and 33 three-room apartments. Electric equipment including ranges and heating devices will be installed throughout.

Wash., Yakima—Apartments—Mrs. L. W. Besancon has had plans prepared for an apartment house at West Yakima and 9th Avenue, to cost \$75,000. Work will proceed immediately. Electric ranges will be installed.

Wash., Seattle—Office—The Dexter Horton Estate has announced that construction will proceed immediately on proposed \$2,500,000 bank and office building to be erected at 3d Avenue and Cherry Street. Structure will be 12 stories high, and will be built in two units. First unit will be 127 x 120 feet containing 500 offices; second unit to be started as soon as first is completed, will be 14 stories high, containing 500 offices. Building will be of reinforced concrete and steel. John Graham, L. C. Smith Building, architect.

Wash., Spokane—School—Jasper & McClellan, here, on a bid of \$79,970, received the contract for erection of a new high school building at Sandpoint, Idaho. Structure complete will cost \$150,000.

Wash., Tacoma—Hotel—The Citizens Hotel corporation had been formed to handle the construction and financing of the proposed new \$1,500,000 community hotel to be erected in this city. Temporary acting board is composed of Henry A. Rhodes, Major Everett G. Griggs and J. T. S. Lyle. More than a million dollars has been pledged, which insures the immediate commencement of work on the project.

Wash., Seattle—School—A new \$100,000 school for St. Alphonsus' Parish on Fifty-eighth St., between Fourteenth and Fifteenth Avenues, will be built shortly. The building was planned by Architects Lundberg and Mahon, and general contractor is Charles H. Schaar. The structure, according to plans, will be three stories in height, 58 x 199 ft., covering an entire block.

Wash., Seattle—Fraternity House—Work was started last week on the construction of a new \$45,000 home for the Delta Chi Fraternity of the University of Washington at the southwest corner of East Forty-seventh Street and Nineteenth Avenue Northeast. The building will be of old English Tudor design and will contain about thirty rooms. It is of brick and hollow tile construction. Architects are C. H. Bebb and Carl F. Gould.

Wash., Seattle—Hotel—Articles of incorporation for the Community Hotel Corporation of Seattle, organized for the purpose of building a hotel, have been filed and a lease for the block on the University tract to be used as a hotel site has been signed. The tract is to be cleared of all present buildings and turned over to the hotel company within four months. The company agrees to erect a hotel on the site within 18 months after receiving possession of the lot, at a cost which shall be not less than \$2,000,000.

Wash., Kelso—Mill—The Long-Bell Lumber Company is preparing for construction of its mammoth mill and logging operations at Kelso. A dock 500 ft. long and 48 ft. in width is under

construction adjacent to the mill site. A ferry will be operated between the dock and Rainier, where a landing also has been secured for transfer of equipment and machinery for the plant. This dock will be completed soon and put into use.

Wash., Spokane—Mill—The Diamond Match Company is erecting a new planing mill at Cusick to cost \$30,000, at which lumber not suitable for match wood will be prepared for market. The match plant of the company in Spokane is also being enlarged and improved throughout.

Wash., Tacoma—Mill—The plant of the Mineral Lake Lumber Company, destroyed by fire with a loss of \$250,000, will be rebuilt, according to Albert Cookingham, treasurer of the company.

Dams

Ariz., Prescott—S. D. Gillis Engineering Company has been awarded contract for building the Banning Creek Dam, price \$79,434.

Ore., Bend—Work on the Crane Prairie storage reservoir dam, the beginning of a \$500,000 irrigation program outlined by the North Canal Company, is to start at once. The dam will be completed by October 1, according to John Dubuis, engineer for the company.

Ore., Coquille—A \$40,000 dam to be used for storing a supply of water for the city of Coquille, is to be built on Rink creek, a tributary of the Coquille river. Stevens & Koon, engineers, are in charge.

Highways

Cal., Yreka—The construction of a 65-mile road down the Klamath river from the mouth of the Shast river to Happy Camp is under way. The work is being done by convict labor and is under the supervision of N. F. Taylor, engineer of the State Highway Department.

Colo., Durango—Approximately \$50,000 will be spent in rebuilding the Durango-Silverton-Ouray highway between Durango and Silverton during the remainder of the present year. The federal government has appropriated \$35,000 for the work, the state highway commission an additional \$5,000, and other appropriations will reach a total of \$50,000 for this year's improvements.

Idaho, Kamiah—A \$50,000 bond issue will be voted for the construction of a highway from Kamiah to Nez Perce. This bond issue makes possible the connecting link between the North and South highway and the Lewis & Clark highway. With this \$50,000 issue, \$35,000 of state money and \$20,000 county money will be put on the road, making a total of \$105,000.

Ore., Salem—The State Highway Commission has made the following disposition of various projects: Unit No. 1, Myrtle Point-Camas Valley section of the Coos Bay-Roseburg highway, Coos County, 11.62 miles, rock or gravel surfacing; awarded to Warren Construction Co., at \$61,000; the Merrill section of the Dalles-California highway in Klamath county, 2.58 miles of grading and surfacing; to Klamath County Court at \$31,863; the Neskowin-Hebo section of the Coast Highway in Tillamook county, 12.66 miles of grading and surfacing, to the Tillamook County Court at \$157,383.50.

Wash., Chehalis—George E. Banderet, here, on his bid of \$34,899.90 received the contract from Lewis county for clearing, grubbing and draining 4 miles of the National Park Highway, in Lewis County.

Wash., Seattle—Contract for paving the Orillia-Kent road, a long the west side of White River Valley, has been awarded by King County to Albertson, Cornell Bros. & Walsh of Tacoma, for \$138,500. Contract provides for a concrete road, 20 feet wide and 4.38 miles long. Engineer T. R. Beeman's estimate for the work was \$143,731.97.

Irrigation Projects

Idaho, Boise—The state reclamation district bond commission has issued an order recommending the certification of \$500,000 worth of irrigation bonds of the Crane creek and Sunnyside irrigation districts in Washington county, Idaho. The Crane creek district proposes to issue \$165,000 worth, and the remaining \$335,000 worth of bonds will be issued by the Sunnyside district. The Crane creek district comprises 3,591 acres of irrigated land and the engineer's report to the commission places the reasonable value of the lands in the district at \$408,425. The Sunnyside district includes 6,514 acres of land and the reported value is \$873,437.

Montana, Great Falls—The low bidder for the construction of canals and structures on part two of the Greenfield division of the Sun river project which will provide laterals sufficient to place 12,000 additional acres under irrigation is Fred Cooledge of Laramie, Wyo. The reclamation service expects to call for bids for the construction of a concrete bridge at a point where the Greenfield south canal crosses a state highway. It will be 42-ft. span with a width of 18 ft. Designs of the bridge have been completed and will be submitted to the state highway commission for approval.

Ore., Salem—Plans for the reclamation of the Eagle Point irrigation district, in Jackson county, were presented and a request for a certification of its \$400,000 bond issue made by a delegation from the district recently at the office of Percy Cupper, state engineer. Contracts for construction work probably will be let in July. The district, which covers 5,000 acres, expects to secure its water supply through the construction of a canal from Big Butte creek.

Wash., Ellensburg—Report of John R. Sherman, engineer of the Kittitas Reclamation District, has been made public, outlining the revised plans for the construction of the proposed Kittitas high line canal, a project which was first surveyed in 1889. The canal now proposed will be 91.32 miles long, of which 26.2 miles will be concrete lined. According to the estimate, 33 acre-inches of water would be distributed, approximately 10 per cent more than provided for in prior plans. The estimated cost of the project, which will irrigate 70,000 acres in Kittitas County, exclusive of storage water, would be \$8,691,423, an average of \$99.04 an acre. The district has a contract with the federal government for water with easy payments, covering 20 years, after the water is on the land.

Wash., Prosser—By a vote of 221 to 5, residents of the Horse Heaven irrigation district formally ratified recently a \$32,000,000 bond issue and contracts for the construction of the proposed project. The contracts call for a 112-mile canal, 96 miles concrete-lined, eight miles of tunnel and nine miles of siphons. The work is to be started within 60 days. Of the 340,000 acres in the project, 256,400 acres will be watered by the first unit.

Power Projects

B. C., Victoria—The East Kootenay Power Company, which supplies the towns of Fernie and Cranbrook, B. C., with electric light and power from the plant that it has developed on the Bull river, will commence at once on the development of a 20,000-h. p. plant on the Elk river. The construction of the latter plant has been made necessary because the company has entered into a contract to supply the Consolidated Mining & Smelting Company with power to operate all the machinery at its Sullivan mine and the new concentrating plant which is in course of construction and which will have a capacity of 1,500 tons of ore daily. At the present time the Sullivan mine is provid-

ing more than 80 per cent of the lead and 90 per cent of the zinc outputs of Canada. The contract calls for the delivery of not less than 8,000 h. p.

Cal., Turlock—By an overwhelming vote the proposition to distribute power from the Don Pedro plant by the two districts of Turlock and Modesto was recently carried. The voters also took favorable action on the plan to issue bonds in the sum of \$4,000,000 to erect a power house, pole lines and transformer stations.

Cal., San Francisco—Bids for supplying \$135,000 worth of electrical equipment for the Moccasin Creek power plant on the Hetch Hetchy water project of the city were called for yesterday by the Board of Public Works. The bids will be opened August 9. Transformers and accessories of an estimated cost of \$75,000 and switchboards and accessories valued at \$60,000 are included in the bids to be received. The equipment will be placed in the power house at Moccasin Creek, 140 miles from this city, which, when completed, will produce annual power equal to the present total electric supply of San Francisco.

Colo., Loveland—Bonds in the amount of \$425,000 will be issued to build a municipal hydro-electric light and power plant on the Big Thompson river. The city council has authorized the mayor to receive bids.

Idaho, Twin Falls—Construction of an electric transmission line from the terminal of the Idaho Power Company's line east of Hansen to Murtaugh will be completed by A. Harvey Ball of Burley, under provisions of an agreement with the Murtaugh Mutual Electric company, which was formed several months ago to carry out the enterprise, and which, after purchasing considerable material, suspended operations because of the financial situation. Under the agreement, which was filed in the office of the county recorder, Ball will receive, for completing the undertaking, all of the material purchased by the company, and sole ownership of the line after its completion.

Ore., Klamath Falls—Sale of \$123,000 worth of street-improvement bonds was authorized by the city council. Paving will start as soon as the bonds are sold. A new sewer unit will be installed at once at a cost of \$60,000. The contract was let to G. C. Lorenz, local contractor.

Ore., Hood River—Construction work has begun on the new \$1,250,000 power plant of the Pacific Power & Light company here. The Phoenix Utility Company will have charge of the work, H. H. Schoofield of Portland being general engineer.

Wash., Hoquiam—Work has started on the foundation for the \$250,000 power plant which the Grays Harbor Railway and Light Company is to install at the Grays Harbor mill. The new plant, it is expected will double the power supply of the Harbor and will enable the power company to furnish light and power to Montesano, Elma and other eastern county cities.

Railways

B. C., Vancouver—With a view to supplying the increased demand for electric power in Vancouver and the surrounding district, the B. C. Electric Railway Company will drive a tunnel to connect Lillooet and Stave lakes, and thus greatly increase the water supply in the latter lake. The tunnel, which will be rather more than 4,000 ft. long and 16 ft. in diameter, will be driven through rock for practically the entire distance, and it is to be lined throughout with concrete. If the present plans are carried out the work will be commenced from both ends this summer, and, it is expected, will be completed by September, 1923. It is estimated that the cost will be in the neighborhood of a million dollars.

D. C., Washington—A certificate authorizing the Los Angeles and Salt Lake Railroad to con-

struct a new line from Delta to Fillmore, Utah, a distance of 31.4 miles, was issued today by the Interstate Commerce Commission. It is estimated that the line will cost \$701,188, and that with the construction of 3.6 miles of secondary tracks it will make accessible about 90,000 acres of farm land and about 100 square miles of white pine timber. The Union Pacific and Oregon Short Line have agreed to advance the funds for the work and the commission certificate held that it was probable the line would pay expenses as a feeder to the larger systems.

Streets and Sewers

Utah, Ogden—The Wheelwright Construction Company of Ogden has been awarded the contract for paving of upper Twenty-fifth street district, consisting of three blocks on Twenty-fifth street and on Tyler avenue from Twenty-fifth to Twenty-sixth streets. The amount of their bid was \$47,288.86.

Utah, Provo—The contract for the curb and gutter on Third West street has been let by the city commission to Christensen, Jacobs & Gardner for \$12,185.90. Work will begin immediately.

Utah, Ogden—The Taylor-Child Construction Company has been awarded the contract for paving in the West Ogden district. The contract calls for a five-inch concrete base and two-inch bitulithic top. The bid was \$55,051.

Wash., Seattle—J. B. Covello, on his bid of \$73,316.50, received the contract for grading and paving Corson Avenue.

Wash., Seattle—John Mattson, contractor, on a bid of \$273,217.25 submitted the low bid for the grading of Marginal Way, Seattle. Three other bids were submitted. City Engineer A. H. Dimock's estimate for the work was \$272,390.80.

Wash., Aberdeen—The Green Engineering Company, here, on a bid of \$25,536, received the contract for paving of Michigan street, from Heron to Simpson Avenue.

Wash., Seattle—The Board of Public Works recently awarded to Scalzo & Company, 1708 22nd Avenue South, contract for a concrete and brick sewer in Murray Avenue, et al, on their bid of \$227,845.

Waterworks

Cal., Lakeport—A report has been filed by City Engineer John Sullivan regarding a water and sewer system here. It will be necessary to hold an election for a bond issue to spend \$55,000 for water system, \$10,000 for the out-fall sewer system, for which three septic tanks will be constructed. The estimates include a 2,000 gal. storage tank, fire hydrants, pressure valves and cast iron pipe for water extensions. By establishing an automatic switch at the pump and reservoir the system will supply 1,000,000 gal. per day.

Cal., Napa—The city council has taken another step toward acquiring a municipal water system for Napa by passing a resolution deciding to call an election for bonding the city for that purpose. It is estimated that the project will cost \$600,000—\$240,000 to purchase the Napa City Water Company's plant and \$360,000 to bring the water from Milliken Canyon into Napa.

Cal., Los Angeles—Water bond issue for \$250,000 for improvement of San Gabriel Valley water system carried at election recently held. Work of improving valley water system will begin at once.

Colo., Fort Collins—The construction of a settling basin with a capacity of 2,000,000 gallons for the municipal water works system has been authorized by the city council. Bids are being received by John Revell, city engineer.

Nev., Elko—In an endeavor to augment the flow of water for the municipal plant of the city of Elko, drilling operations have been com-

menced on the China ranch, taken over by the city when it became the owner of the present municipal system. Water filings have been made for an underground flow of 2,000,000 gal., and it is this water that it is hoped to develop in sufficient quantity for augmenting the present supply and for reserve in the future. A contract has been entered into between the city and Charles Reinker for the drilling of eight wells.

Utah, Ogden—Thirty-four blocks of water main extensions have been authorized by the city commission. The improvement will cost about \$150,000, according to the estimate of city engineer W. E. Craven, who has been instructed to publish a notice to contractors for the work. Bids will be opened August 1.

Wash., Walla Walla—The contract with the Puget Sound Bridge & Dredging Company of Seattle, for the completion of water works improvements at a cost not to exceed \$132,715, has been signed by Mayor Hill. Work will start immediately.

Wash., Walla Walla—Bids submitted on June 27 for the contract to complete Division No. 2 of the Walla Walla waterworks development show a decided decrease over those submitted on June 6 and rejected by the city commission. Low bid on the latest call was that of Puget Sound Bridge and Dredging Company, Seattle, who were low on both wood stave and steel pipe; their bid was \$110,847.75 for wood pipe; \$142,532.40 for steel pipe. The Walla Walla Concrete Pipe Company, Walla Walla, bid \$139,256 for wood stave pipe. The city water commission has taken the bids under advisement. The job involves the building of a new diversion dam and intake on Mill Creek, and furnishing 4 miles of 20 in. conduit; construction of wagon road and telephone line, including the furnishing of all materials.

Miscellaneous

B. C., Esquimalt—Drydock—The Dominion Government has ordered the continuance of work on the drydock at Esquimalt, B. C., and has appropriated \$1,000,000 to carry on the work during the present fiscal year. The construction of the drydock was ordered by the late government and more than a million dollars had been expended in excavation work when the work was suspended, following a change of government. The suspension of operations, however, raised such a protest from the citizens of Victoria and Esquimalt that it was thought wise to order the continuance of the work. It will take two years before the dock will be finished; the total cost is estimated at five million dollars.

B. C., Vancouver—Piers—The Canadian Pacific Railway Company is asking for tenders for the construction of a new pier between piers A and D on Vancouver harbor, at the Pacific terminus of the railway. Plans and specifications may be seen at the office of H. Rindal, Vancouver, chief engineer for the company. Tenders will be received up to three o'clock, p. m., on Monday, July 17. The contract will call for the work to be completed by Sept. 30, 1923. The pier will be 850 ft. long and 330 ft. wide, and it is estimated that the cost will be in the neighborhood of two million dollars.

Cal., Colusa—Packing Plant—The contract for the construction of the plant of the California Prune and Apricot Growers' Association at Colusa was awarded to A. Webster of Chico. The contract calls for an initial expenditure of over \$80,000 and the work will start immediately.

Colo., Denver—Lighting Plant—The Central Gas and Electric Company, through F. L. Cox, has secured the contract for the electric lighting plant, wiring, etc., for the new school building at Meeteetse.

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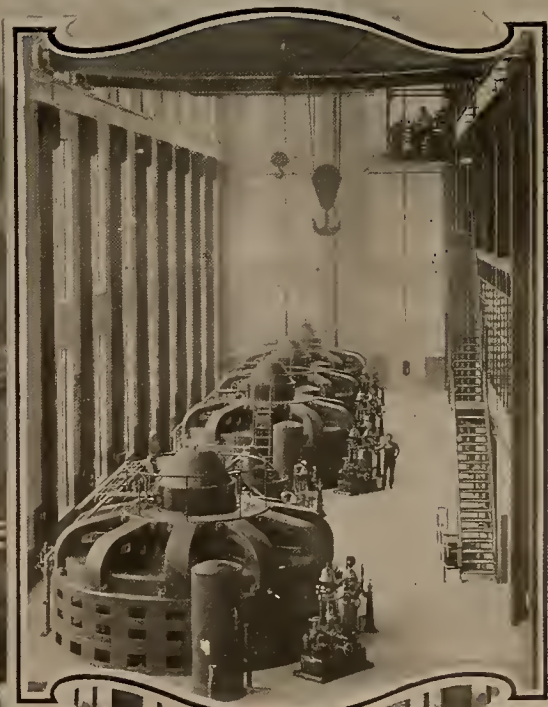
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WANTED—A MOSES

THERE never has been so great an opportunity for profitable sales effort as that which faces the Electrical Industry in the West today. The American public is being sold to a greater degree than ever before on the uses of electricity in the home, so much so that one of our greatest electrical manufacturing concerns has recently reorganized its selling activities to place major emphasis not on apparatus or supplies but on its department of merchandising. The possibilities of electrical merchandising throughout the whole nation were never better and the eleven states west of the Rockies, due to unprecedented growth in population, in electrical development and unsurpassed building records offer even greater opportunities.

Thoughtful men realize that if we of the electrical West are to reap the full benefit of these wonderful opportunities, we must discard working tools that we have outgrown. Open criticisms are being made that the present association activities tend toward intrigue; that they are not properly financed; that they restrict sales effort to channels that are artificial; that real constructive leadership is lacking on all sides; that those in charge are not representative of the entire industry; that the various associations are causing costly duplication of effort; that one all-embracing organization should be formed to take full advantage of the bright future immediately before us.

There is a real need for rehabilitating the various organizations engaged in promoting such merchandising and contracting effort as has in the past rendered good service. To this end, the present organizations—among them the California Electrical Cooperative Campaign, the California Association of Electrical Contractors and Dealers and other similar activities throughout the West should be revitalized.

We need at once full and authoritative information regarding the present channels of distribution. The aim of such reorganization, should be to set up an institution that will undertake a careful research analysis of the present channels of electrical distribution for such staple supplies as electric irons, for wiring and its accessories and for electrical specialties such as the electric range and the electric refrigerator. The names of all firms engaged in this work of every kind and character should be listed and classified. Definite standards should be established for all equipment, the workmanship involved in its installation, and for such inspection and adjustments as may be required thereafter.

The privilege of some distinctive insignia or trademark should be granted to firms that agree to comply with such standards, with penalty of expul-

sion for failure to fulfill the requirements of membership. This institution should employ competent field workers who will teach dealers and retailers how to sell electrical merchandise, read specifications and properly estimate jobs and establish correct cost accounting systems. This institution should also take upon itself the responsibility for selling to the public the electrical idea of the industry as a whole. It should fearlessly combat present day evils and improper methods in vogue in merchandising and contracting now complained of on all sides, and any tendency toward stifling legitimate channels of trade and honest competition. Beyond all, its function should be educational, and to this end its greatest ideal, to be constantly held in view, should be to widen the channels of merchandising and never to restrict their growth so long as quality effort is adhered to by those seeking recognition.

We are now witnessing the disorganization of organization, the conflict of organization with organization, and of organization with the so-called independents, that has so be-fogged the issue that it is time for dispassionate study of the situation as a whole, and for the clear thinkers to shuffle the cards, and give everybody a new deal. Our mail has been flooded with complaints, criticisms of everybody by everybody else. There is one conclusion that may be safely drawn at this time, and that is that the existing organizations have failed to accomplish their purpose. This does not mean that organization per se is the wrong idea. On the contrary, organization is the only solution of the difficulty. Organization means order, cooperative thinking, constructive progress, and the constant betterment of the industry, while disorganization means chaos.

To do its part in helping toward the consummation of this end, the editors of the Journal of Electricity and Western Industry will conduct an independent field investigation of the merchandising problem in all its phases in the West, reporting the results of these investigations from time to time as fast as they can be prepared for publication. You, our readers, are invited, urged, to do your part. If you have anything on your mind, say it, through the columns of this paper. If, for any reason you so desire, your name will not be published, but no anonymous communications will be considered. There is a big job to be done and it will take a big man or big men to do it.

Who will be the Moses, who will lead the electrical merchandising industry out of the Egypt of disruption into the promised land of progress, peace and prosperity?

The Unmerging of Western Railroads

WILL the best interests of the West be served by the ownership of the Central Pacific by the Southern Pacific or by the Union Pacific? This is the question which is now concerning the Pacific Coast. There seems to be very little else involved in the present problem of railroad unmerging besides this issue. The Supreme Court has interpreted the law to mean that, for the past quarter-century, two western railroads have been operating together illegally. It has ordered that such joint operation terminate.

It seems to be generally acknowledged that the Central Pacific cannot long remain a separate unit. The advantages of a unified operation of railroad systems was established during the war period and the Interstate Commerce Commission has been expressly instructed to group the companies into a few competing units which shall offer the maximum of service to the country served. Professor Ripley of Harvard University, in presenting a plan for this grouping, included the Union Pacific and the Central Pacific in one unit. In revising his plan, the committee conducting the investigation grouped together the Southern Pacific and the Central Pacific. It is therefore a possible and a natural thing for the Interstate Commerce Commission now to give permission for the joining of the Central Pacific Railroad with either of the contending roads.

The untangling of the present alignment would present many difficulties. The Southern and Central Pacific own isolated sections of track in many sections of the West which could be of use only if operated in conjunction with lines of the other road. The railroad shops are the property of the Central Pacific, the entire equipment of refrigerator cars belong to the Southern Pacific—neither railroad has complete operating equipment. And yet it must be remembered that in 1912 the Southern Pacific was prepared to sell that section of the Central Pacific between Sacramento and Ogden to the Union Pacific and had worked out a method whereby this was practicable. Presumably through long term leases, and actual sales of track and property, a method of unscrambling could be worked out—the question is whether it is desirable.

California, Arizona and New Mexico seem united at the present time upon the basis that conditions should remain as they are, Oregon and Washington appear to be watching events and Utah in some respects favors the Union Pacific. The question of rates is not involved, except as the extra expense of reorganization might give a justification of higher freights, nor in general is there a question of favored routes. Shippers and passengers alike have complete choice of routes and there seems to be no evidence that they do not freely exercise that choice. The question seems to be one of service alone and under the head of service, the pioneering development of the country. It is well to remember this issue in any discussion of the situation and to re-

member, as well, that competition is not always the greatest stimulant to development. A road which serves one territory completely is usually best able to expend money in the promotion of its prosperity.

A Tangle in Accounting Straightened Out

THE transmission of hydroelectric energy over distances of hundreds of miles with the consequent serving of scores of communities en route, has long since made necessary in the west a more greatly extended system of accounting than is found necessary in the power company operations to the east of the Rockies. When it is remembered that one large power company of California serves a greater territory than the whole of New England with its two hundred odd utilities serving that district, one begins to get a faint glimmer of the differences involved.

This situation is somewhat more aggravated at the present time due to the necessity for meeting certain legislation in the West which requires knowledge of segregated cost statistics for different parts of the system of one company. Thus while a New York company may find its needs entirely met by keeping only one land account, one building equipment account, and so on down the list, a western company, particularly a California company, finds it most advantageous to have a far greater detail whereby the land account would be subdivided so that proper charges could be made against the power house, transmission line, distribution system and other segregated units.

In view of all these necessities in the West, it would seem best that provision be made in the national accounting standard so that this extended detail may be carried out in those communities where it seems best or where regulatory commissions demand it, and yet at the same time leave a simple framework as a basis which is not inharmonious with a national standardization of accounting. This is entirely feasible by properly extending the detail of accounts, agreeable to the general standards laid down by the accounting committee of the National Electric Light Association, in which due consideration is given to the recent findings of the accounting committee of the Pacific Coast Electrical Association.

Exchange Students Between Sweden and Pacific Coast

BACK of the phenomenal progress made by Japan in the past quarter-century has been the practice adopted by that country of sending students in scientific and engineering fields to every part of the world to study conditions and accomplishments in other countries. This is perhaps the most conspicuous example of the advantages of exchange students—but instances are not lacking in other fields which evidence the gain in practical knowledge as well as in international good feeling resulting from such a system.

On another page of this issue is a letter from a Swedish student who has gained much from a close

study of western conditions. He speaks of the advantages to be gained from such an exchange and suggests that western engineering men might find much of profit by a study of electrical development in Sweden, where high heads and long distance transmission present problems very similar to those of this region.

The suggestion is particularly addressed to the universities and the power companies—and it is to be hoped will find a sympathetic response. We of America are too prone to believe that we can assist others but cannot ourselves learn from the rest of the world. We have indeed accomplished wonderful things on the Pacific slope in the development of electricity—and for this reason a comparison with methods developed elsewhere, to meet similar problems, would be most valuable.

The Intermountain Electrical Exposition

THERE is to be an exposition in the Intermountain district Oct. 2-14 at Salt Lake City, under the auspices of the Rocky Mountain Electrical Cooperative League. This is not to be a mere passing exhibit of local proportions, but plans are being laid for an achievement that will by long odds eclipse any other similar undertaking that has ever before been attempted in that enterprising section of the West. The illumination features are to be especially attractive and are under the direct supervision of W. D'Arcy Ryan, known to the West as the creator of the famous Tower of Jewels at the Panama-Pacific Exposition in San Francisco in 1915.

Western manufacturers and western representatives of eastern manufacturers are urged to do all in their power to make this exposition a one hundred per cent success by having their own individual exhibits at this promising affair for the upbuilding of the electrical West.

A Chance to Vote for Higher Taxes

NO BURDEN will fall upon the tax payer from state ownership of power development, according to the proponents of the Water and Power Act of California. The statement on the face of it appears improbable to any one familiar with conditions of government ownership—and on close examination develops various aspects which should be understood by the voters of the state.

The bill as it is to be presented to the people involves the provision for a direct tax to be mechanically applied, should the proceeds from power development ever fail to pay the interest or principle on the \$500,000,000 in bonds issued. "But rates will be charged so that there never is a deficit," say the advocates of this measure. There is one probability which they overlook in this statement of optimism. It has been the case with almost every government undertaking which has been constructed that the time of completion is greatly underestimated. In the case of the New York traction scan-

dal, seven or eight years elapsed before the income bearing properties began to yield an income, the tax payer painfully providing the interest in the interim. The citizens of Seattle are familiar with the sensation of paying out money to meet obligations on a power development for many years during which it had been expected to pay its own way.

There is no question but that each community will pay in full for the power it receives, especially with the provision that an additional bill may be rendered at the end of the year to meet any miscalculation—although it may be questioned how long they will care to keep up this kind of contract—but until the power is ready to deliver, there is nothing to collect. It is just this kind of a fiasco which has strewn the continent with the wrecks of municipal and state failures and which has brought about the general American distrust in government ownership.

The Electric Truck as a Western Possibility

ONE field in which the West has not lived up to its electrical possibilities is in the use of electric trucks. These convenient vehicles have found a wide application in the East, displacing horse drawn and gasoline trucks almost entirely for city work in some instances and finding considerable service in long distance hauls where the proper provisions are made for recharging or changing batteries along the route.

Western interests up until now have been somewhat skeptical of its use in this district, owing to the long hauls necessary under local conditions. With a cruising radius of only fifty miles for the batteries and the length of time required either to recharge or change them, the drawbacks seemed to overshadow the advantages. A new development in the latest trucks, however, permits the use of a "stone cradle" with which batteries can be changed in less time than it takes to fill the average car with gasoline. Service stations established along the line of main highways, therefore, would provide a simple solution for the difficulty.

On the positive side, the electric truck has many advantages. Not only is the cost of upkeep much less than with any other type of conveyance, but the insurance companies are prepared to give a very favorable rate owing to the freedom from fire hazard and the other safety elements of the machine. As much as fifty per cent has been saved on this item alone by some of the large eastern concerns. Another attraction is the decrease in the number of accidents reported when electric trucks are used. Whether the simplicity of operation and the perfect control is at the base of this or whether the more cleanly work attracts a higher type of drivers is uncertain, but records of many companies show this to be the case.

There is no question but that there is a great future for the electric truck in western commercial centers—and the possibilities of an attractive field for its use even in long haul work in handling highway freight.

Western Comment on Current Events

Editorial Notes and Readers' Views on the Outstanding Aspects of Financing, Trade Promotion, Legislative and Associated Topics that have a Special Bearing on Western Business

Recent announcement that two of the largest oil companies in America, the Standard Oil Company and the General Petroleum Company, had contracted with leasees of Alaskan oil lands has caused a flurry of interest in the Northwest, particularly in Seattle. Projected plans of the two companies call for an initial expenditure of two million dollars for development work, before production begins. The lands to be developed lie in the Gold Bay district, and consist of some eight hundred and sixty claims, the locators of which have signed a working agreement with the Western Development Company, the intermediary through which negotiations were consummated with the operating oil companies.

Seattle looks forward to prosperity greater than that attendant upon the discovery of gold in Alaska, and certainly, if oil in any commercial quantities is found, of more enduring moment. Geographically and economically Seattle is situated to be the principal port of departure for Alaskan exploration. She is equally favorably situated to handle fleets of tankers and as a refinery base. Development of oil on a large scale would usher in a new era in the industrial life of the Pacific Northwest, and indications point to the fact that such will be a reality in the near future.

With 48,259 individual holders of its common stock, the Southern California Edison Company of Los Angeles probably has more people financially inter-

Development Started in Alaskan Oil has caused a flurry of interest in the Northwest, particularly in Seattle. Projected plans of the two companies call for an initial expenditure of two million dollars for development work, before production begins. The lands to be developed lie in the Gold Bay district, and consist of some eight hundred and sixty claims, the locators of which have signed a working agreement with the Western Development Company, the intermediary through which negotiations were consummated with the operating oil companies.

Utility Has Record Number of Stockholders This enormous ownership by consumers, residents of the territory which it serves and company employes, makes a record in the public utility business which is attracting very general attention, and is having an important bearing on financing. While the Southern California Edison Company was not the originator of the plan of associating consumers and the people of the community served in the business which supplies electrical service, it has taken up the movement which had its inception in California in 1914, and has developed it to a point where the company activities in the development of the water power resources of the state, and in the use of its electricity, has become a project of the people, in which the people are not only financially but earnestly and patriotically interested.

Starting with a plan by which all employes could become participating stockholders in the company,

on easy payments, there was built within the amalgamated organization, an inter-company sales force, which has become the great factor in making Edison stock the most universally owned security in the southwest. The plan of financing construction work through the sale of both bonds and stock was a fundamental part of the employes' education, the instructions going to the very root of sound financing. They were earnestly followed with the result that a great inter-company sales organization of employe stockholders was developed from the rank and file of the workers.

Experience has proven that the ownership of stock by employes has increased their efficiency and has resulted in economy in operation and tended to bring the service to a very high point of excellency. Ownership by consumers keeps the ownership and management of the company in Southern California where the problems of electric development and distribution are understood. A community in which an average of about one family out of four derives a portion of its income from the dividends of the company which supplies its electric service, is essentially a thrifty and progressive community in which disturbers and agitators find little sympathy and sound financing is regarded as the basis of future prosperity.

Nothing more surely emphasizes the industrial growth of the West than the establishment in San Francisco of a branch of the Underwriters' Laboratories, Inc., by the National

Manufacturers and Importers are Benefited Board of Fire Underwriters. These laboratories test all appliances, devices, systems and materials having any bearing whatever upon the hazards of life, fire and collision and the prevention of accidents and theft. It is becoming very difficult to market an electrical appliance or product used in building construction which has not been tested by the Underwriters' Laboratories.

Inasmuch as this is not a money-making organization but is maintained at actual cost for the great purpose of fire prevention, its tests and findings have the hearty cooperation of various civic, fire prevention, state, federal and municipal bodies and insurance organizations, all working to the elimination of fire hazards.

The establishment of a Pacific Coast office in San Francisco has been a great convenience to manufacturers and inventors in the Pacific Coast and western states in the development and manufacture of their various devices.

One of the many examples of freak legislation will appear as a referendum measure in California in November, in the State Housing Act. It is claimed that the act would prohibit the use of shingles for roofing in any city, town or incorporated community in California. Lumbermen maintain that the act is unjust and discriminatory, and a campaign under the direction of the Executive Committee California Lumbermen is being conducted to defeat the measure.

The objectionable part of the act is contained in the following paragraphs:

"Every wooden building hereafter erected in every incorporated town, city or city and county, shall have the exterior walls thereof and roofs thereon constructed of the same kind of materials and in the same manner hereinbefore provided for semi-fireproof buildings."

"The roofs of every semi-fireproof building shall be constructed of approved incombustible materials, or be well covered with an approved composition fire resistive or fire retardant material."

The lumbermen claim that this regulatory measure would favor the manufacturers of patent roofings and make a law-breaker of the home-builder who shingles the roof of his dwelling.

The reports of the U. S. Geological Survey for the first half of 1922, covering Utah, Montana, Idaho, Arizona, Nevada and California show that metal mining in all these states is experiencing a decided revival after a year or more of stagnation such as the industry has never before experienced.

The Pittman Act has helped save silver mining during this critical period and generally reduced cost of operation and price of materials is aiding in the resumption of gold mining.

Increased use of copper by our own people is the surest way of helping put this greatest of our western metals on its feet. The outlook for lead and zinc is also most favorable.

Summarizing mining reports, the West can feel thankful that its metal industry is again returning to normal conditions. With a minimum of government and state interference with private industry and a reduction in taxation burdens, mining stands a chance of again employing its tens of thousands of workmen at good wages.

The Mountain States Power Company has completed arrangement with the California Oregon Power Company for the purchase of a large block of hydroelectric power—12,000 kilowatts —for distribution among its customers in the Willamette Valley, Oregon. Under the terms of the contract the California Oregon

Power Company is constructing a 115-mile transmission line to connect its hydroelectric plant at Prospect, Oregon, on the Rogue River, with the Mountain States Power Company's sub-station at Springfield.

The line is being built to operate at 110,000

volts, of size 00 bare copper conductor, on suspension type insulators, with 350-foot spans. It will cross the foothills of the Siskiyou Mountains, and from a point near Roseburg, Oregon, will parallel the Pacific Highway north to Springfield.

While the main connecting line is under construction, Mountain States Power Company is rapidly proceeding with the erection of inter-connecting lines between its various divisions.

A twenty-mile line, for operation at 66,000 volts, is being built to connect the Dallas district with the Albany district. The terminus of this line will be at the town of Independence. An 11,000-volt line will be extended nine miles to connect with the town of Jefferson, until recently served by a municipally operated system.

The completion of these lines will in many ways benefit the Mountain States Power Company and the territory it serves. It will form the connecting link between northwestern Oregon and the great hydroelectric developments in the southern section of the state. The steam power stations of the company have heretofore depended upon sawmill refuse as fuel, and the supply has at times been irregular. The new source of energy supply will permit these plants to close down; they will be maintained as reserve stations for operation in times of emergency. The Willamette valley embraces over 9,000 square miles of the most productive land in the West, and the adequate supply of electric energy, which the construction of this transmission line makes available, will go far to aid the future growth and development of the state.

An important amalgamation of beet sugar producers that is of particular interest to California has just been effected by the consolidation of the Holly Sugar Corporation, which owns or controls six plants in California, Colorado and Wyoming, and the Grand Junction Sugar Company, owning a big plant at Grand Junction, Colorado. The merger was consummated by the exchange of Holly Sugar Corporation common stock for all the outstanding securities of the Grand Junction Sugar Company.

By this consummation, the Holly Sugar Corporation has increased its productive capacity to 1,200,000 bags a year. It now owns outright plants at Huntington Beach, California; Swink, Delta and Grand Junction, Colorado, and Sheridan, Wyoming. It also owns 50 per cent of the stock of the Southern California Sugar Company and 69 per cent of the stock of the Santa Ana Sugar Company, both operating plants at Santa Ana, California.

The merger of the Holly Sugar Corporation and the Grand Junction Company is commonly recognized as a step in advance and in keeping with the general trend toward consolidation of business interests. The enlarged company occupies with the Spreckels interests and the American Beet Sugar Company, a leading place among beet sugar producers in the West.

Letters to the Editor

Cooperation Between All Branches of Industry Needed to Improve Conditions of Contractor

To the Editor.

Sir: In your "Straws Show," page 1, issue July 1, you give food for thought.

People buy where they can buy cheapest. The same man who demands union wages goes out nights, Sundays and holidays and works for friends, neighbors, and acquaintances at what to him is good pay, but the contractors cannot meet his terms because of overhead, and the fact that they have to pay this cutthroat union wages. And these same contractors, because this man works for them, allow him to buy "stuff for his own use" at wholesale or cost price to them, aiding in cutting their own financial throats. I know that union men are not supposed to do these things, etc.—the point is, they must not do these things. If this type does this sort of thing can you blame any other chap who knows enough to install stuff and get by a building inspector if he tries to pick up a little easy money?

The idea is that as long as anyone can buy electrical fixtures and put them in, the man who does it cheapest will get—all over the country, in the aggregate—enough business to injure legitimate, right thinking and right planning contractors who really have the good of their customers at heart and want to give them real service at a fair price under conditions as they exist. To curb "shyster" practices, manufacturers must cooperate with jobbers, jobbers with retailers, and, all together, must get after the unions, making them enforce their own rules as to outside work; get after municipal law makers and have them pass more stringent laws as to what may pass inspection; get after underwriters to make insurance risks tighter, etc. It will take it all to make an impression.

W. E. READER.

San Diego, Cal.

Basic Iron Industry Made Possible by Electric Furnace Need of Western Industry

To the Editor.

Sir: Mr. Larry J. Barton's discussion in your issue of June 1st is somewhat puzzling. He does not clearly emphasize in the same, the fact that the electric furnace is used for two, not necessarily interdependent distinct purposes in the iron industry. These are:

A. The electric furnace is used as a shaft-furnace to produce from iron ore, lime, charcoal and electric energy, a semi-finished product, pig iron.

B. The electric furnace is used as an electric steel furnace for the purpose of refining pig iron, or scraps of various kinds, producing a finished product, steel.

An iron industry in California should be based on combining the two uses of the electric furnaces, both of them quite different in type, and produce a finished article, a high grade commercial product like tool steels, steel castings, light rolled materials, etc.

It is very doubtful if electric pig iron under any circumstances can compete with blast furnace pig, and especially with the cheap Chinese article brought into the western market.

The figures which Mr. Barton quotes as to cost of producing electric pig iron, are the Swedish costs adapted to American conditions. Anyone familiar with Swedish and American conditions will quickly realize that the assumed costs are not those existing in Sweden, but those which would occur under suitably arranged conditions in U. S. A.

The finished articles from an iron and steel industry such as outlined by me (that is, starting with the ore and carrying through the stage of semi-finished pig iron to the finished steel product); demand a high price and there always is a large market for these; therefore an undertaking under given California conditions would be a success financially, and would be a basic industry developing the natural resources of the state.

Producing steel in the electric furnaces from scrap metal is a perfectly legitimate industry but is essentially a "junk business"—creates nothing new, but is like the snake swallowing its own tail.

A basic iron industry is what California needs, built up on conditions as they exist here.

J. W. BECKMAN,

Beckman & Linden Engineering Corporation.
San Francisco.

Model Installation of Electric Cooking and Heating Appliances in Yosemite Valley

To the Editor:

Sir: You will be interested in knowing that there is a connected load of close to 1,000 hp. of electric cooking, air heating and water heating apparatus in actual service in the restricted area of the Yosemite Valley. At the present time, on cooking operations alone, there is over 400 hp. used regu-



ELECTRICAL INSTALLATION AT CAMP CURRY

Top row—Merced River and Falls. Second row—Interior and exterior views of Yosemite National Park Power Plant. Center—Charles Matthews, chief electrician, Camp Curry and Resort switch board. Third row—George A. Hughes and Robert T. Williams; Camp Curry service building; pies for the guests. Bottom row—Mrs. D. A. Curry, manager of Camp Curry; left to right—Robert T. Williams, George A. Hughes, Mrs. R. T. Williams, Mrs. G. A. Hughes and P. H. Booth; a Camp Curry bungalow.

larly. The importance of this electric cooking apparatus is brought to our attention when we consider that, if the current was shut down at the Yosemite plant, practically everybody in the place would have to move out until such time as they were able to build up a supply of cooked foods to go into the Valley. When you consider that there are from eleven to twelve thousand people in the Valley at the present time dependent almost entirely upon electrically cooked food for their existence, it is apparent the part that electricity plays in the wonders of the Yosemite.

It is a tribute to the aggressiveness and the managerial capacity of the Camp Curry Company, and the Yosemite National Park Company, as well as the United States Government Department of National Park Service to see the way in which the convenience, comfort, conservation, coolness, cleanliness, and cheapness of electricity for cooking has been utilized.

P. H. BOOTH,

District Sales Manager, Edison Electric Appliance Co.
Yosemite, Cal.

A Regular Exchange of Engineering Students Between California and Sweden

To the Editor.

Sir: As a Swedish exchange student of the American-Scandinavian Foundation, I have during the past twelve months been studying high voltage transmission problems in California. Thanks to the admirable courtesy of the power companies I have had an opportunity to visit a number of the wonderful hydroelectric developments and transmission systems on the Pacific Coast. Many of these were at the time of their completion unique in some respects, placing California as a leading country in this line of technical science and its applications.

In Europe, Sweden no doubt deserves one of the foremost places as a pioneer in electric transmission. To justify this statement, I need only mention the successful development and application of the principle of graded insulation, which has made it possible to eliminate all lightning arresters in systems with voltages as low as 60,000. This principle involves a grading of the insulation in such a way as to concentrate all faults upon easily accessible and replaceable apparatus, leaving expensive and inaccessible parts of the system unharmed. The problem of line insulation has been so successfully solved that during eight years of operation, the failures of suspension insulators have averaged only .005 per cent per year.

During my studies here I have become impressed with the similarity of the problems facing the two countries, especially in regard to the long distances over which the energy has to be transmitted, and also in regard to the importance of hydroelectric developments on account of the scarcity of other energy resources.

The above has convinced me that Sweden and California could derive great benefit from a regular exchange of students of hydroelectric engineering. The exchange idea is by no means a new one, as for instance, the American-Scandinavian Foundation has for several years conducted such an exchange in various fields of arts and science. In this case, however, it seems to me that the idea could be much improved by a cooperation of the universities and power companies in California and Sweden, along the principles outlined below.

One engineer from each country should be sent every year to spend approximately two years in the other country. The first year should be devoted to studies and research work at a university, and a scholarship should be endowed, sufficient to cover the student's traveling and living expenses during

that year. For the second year, the power companies should agree to give the students practical work in their organizations, giving them an opportunity to study the most recent developments, and to obtain an inside view of the operating conditions in their systems, which latter is extremely difficult to obtain in any other way. The student should this year receive a salary, sufficient to enable him to support himself.

Except in special cases, the work of the students probably would not be of much direct value to their hosts. The stimulating influence of the exchange, however, and the new ideas brought home by the returning students, certainly would by far outweigh the inconvenience caused by the students to their hosts.

In my mind there is no doubt that the American-Scandinavian Foundation would most heartily indorse such an exchange and with pleasure place their organization and experience at the disposal of the parties interested in the exchange, and the exchange would thus greatly add to the friendly relations between the United States and Sweden, which are being established in ever increasing numbers.

San Francisco.

IVAR HERLITZ.

How Twenty-four Years Ago Compared with Today in Hydroelectric Projects

To the Editor:

Sir: In these modern days of efficiency and gigantic construction programs, when a mere matter of launching a hydroelectric power project is completed during the course of a luncheon, and a steam plant or two started while enjoying the after-dinner cigar, it is interesting to let one's mind go back to the earlier periods of hydroelectric development—say, about twenty-four years ago. The following paragraphs, reprinted from the Scientific American of March 27, 1897, bring to mind a vivid comparison between the viewpoint of twenty-four years ago and that of today:

"One of the latest and, in many respects, one of the most remarkable long distance transmission plants is that which has been built by the San Joaquin Electric Company to supply the town of Fresno with light and power. Nature has made abundant provision for furnishing electric power along the valleys of the Pacific Coast, the many streams which flow down the Sierra and the Cascade Mountains providing an abundant and never-failing supply of water for this purpose."

The article goes on to tell how this "wonder plant" transmitted electric power to the town of Fresno, a distance of 43 miles, at 11,000 volts, which in those days was a feat of considerable magnitude. When placed in operation in 1896, after having been in process of construction for a period of 14 months, this "wonderful long distance transmission plant" had an installed generating capacity of only 1,400 horsepower, which was later increased to 1,800 horsepower.

It is further pointed out in the article that the "little wonder of the San Joaquin river" supplied current for 165 arc lights, over 5,000 incandescent lamps, and 460 horsepower in motors.

This was twenty-four years ago.

On the site of this plant, which was dismantled in 1910, now stands a modern hydroelectric power plant, owned and operated by the San Joaquin Light & Power Corporation, a producing unit in its system of 14 power houses. It is known as the San Joaquin No. 1, and has an installed generating capacity of 21,400 horsepower. The modern plant was constructed in two parts, construction of the first part began in November, 1909, and was completed in September, 1910, a period of 10 months. The first part when completed had an installed generating capacity of 10,700 horsepower.

Fresno, Cal.

CARL BERNSTON,
San Joaquin Light & Power Corp.

Builders of the West

PERIODS of unusual responsibility sometimes reveal to men ability in themselves which afterwards determines their every activity. Warren H. McBryde was assistant superintendent of the Hercules Powder Company at Hercules, California, when the world became convulsed in the recent war. During that time he had charge of from four hundred to four thousand men. When the period of demobilization came, with the help of the company's employment manager, he secured positions for three thousand men. From that moment his keen interest in the relation of employer and employe and his efforts to gain a better understanding between them have never wavered.

Yet in 1893 when he entered the Alabama Polytechnic Institute, he had no particular thought of the importance of this relation of men to men in industry. He was filled with his ambitions in mechanical and electrical engineering. Graduating in the class of 1897, his work in architectural designing, drafting and construction took him to various parts of the South. Finally as chief electrician on the United States Army transport "Sheridan" during the Spanish-American war, he sailed to the Philippines via the Suez Canal and thence to San Francisco.

In California his rise in his profession was steadily progressive. With characteristic directness he applied to the Yuba Electric Power Company for the job of day laborer. Within a year he was assistant resident engineer.

Later he was in the employ of the Bay Counties Power Company and at a still later date with the California Gas & Electric Company. He is active in the San Francisco Engineers' Club, the San Francisco Electrical Development League and the affairs of the American Society of Mechanical Engineers.

At Hercules where he rose from first resident engineer for the Dupont Powder Company to assistant superintendent of the Hercules Powder Company in the space of a few years, his thorough knowledge of his profession was brought into full use. During the war period he had also charge of the Labor and Industrial departments of the Hercules Works. His



WARREN H. MCBRYDE

Secretary of the California and Hawaiian Sugar Refining Corporation and President of the Industrial Association of San Francisco, who is one of the outstanding figures for better industrial relations in the West.

interest in the improvement of community life also found its expression in his positions of mayor of Hercules and supervisor of Contra Costa county.

This same vital community interest enjoyed a larger field when in 1919 he moved to San Francisco as secretary of the California and Hawaiian Sugar Refining Corporation and assistant to the general manager, handling engineering problems. He had not been long in San Francisco when he found himself one of the directors of the Associated Charities and on the advisory board of the Salvation Army. In his positions in these two organizations he has an excellent opportunity to study the different types of industrial problems which present themselves. Because of Mr. McBryde's experience as an employer and his keen interest in working men he was last year elected president of the Industrial Association of

San Francisco. In that capacity he has an opportunity to put into practical effect some of his ideas of making that city a sound industrial center. Never was a clearer understanding between employer and employe and between the different factions of labor more necessary than now. Mr. McBryde knows that one side is rarely altogether to blame.

In short, he supports the American plan which is that any person who wants to work, is qualified to work, and can find work, has the right to do so, and that no one should be barred from working on account of his affiliation or non-affiliation with any organization. His object as president of the Industrial Association is not to support capital against labor nor vice versa. It is to bring about a better understanding between the two, to give more activity to the great area of population in San Francisco, to make San Francisco not only an excellent place to live in, but also an excellent place in which to work.

To Warren H. McBryde, then, because of his outstanding work as electrical engineer and because of his untiring and unselfish zeal for public good which is bringing about better economic conditions throughout the West, this issue of the Journal of Electricity and Western Industry is affectionately dedicated.



Plant of the Portland Vegetable Oil Mills at Portland, showing ship at wharf discharging copra. Copra is shipped in bulk and unloaded by two six and eight-inch suction lines running into the hold of the ship. The cargo is unloaded at the rate of 40 tons per hour.

The \$5,000,000 Cocoanut Oil Industry in the Northwest

The Strategic Position of Portland in Oriental Shipping, Power Facilities, Labor and Market Has Made Possible the Building Up of an Important Industry for the Manufacture of Copra Products in Portland Vegetable Oil Mills

By FRANK WHALLEY WATSON
Vice-President, Portland Vegetable Oil Mills Co.

IN an attempt to carry out in a practical way, the principle voiced by the slogan "Keep the Port in Portland," an effort was put forth in 1920 to organize a corporation, having its headquarters in Portland, Oregon, for the purpose of manufacturing cocoanut oil, oil cake, and resultant products from raw copra imported from the Orient. This effort resulted in the present organization known as the Portland Vegetable Oil Mills Company, located in Portland, Oregon. In the accomplishment of this purpose the existing disparity between a large volume of exports and a nominal total of imports at the Port of Portland has been substantially reduced; a substantial, modern, and efficient manufacturing plant capable of, and successfully engaged in producing products to the value of \$5,000,000 annually, has been added to the roll of western industries; and an additional proof made that western talent, capital, and executive ability are capable of organizing, financing and operating successfully, their own manufacturing enterprises.

Copra and Its Products

The crude copra of commerce is the dried and broken meats of the cocoanut. It is a staple contribution of the Oriental tropics to the world's commerce, especially Europe and the United States. The principal contributors of this commodity to the Pacific Coast ports are, in the order of relative importance, the Philippines, Java, Ceylon and the many groups of islands comprising Polynesia. Until quite recently, the product was derived from natural groves but of late years an increasingly large supply is furnished from regularly set out and cultivated plantations.

Fair merchantable copra contains about 70% of its weight in vegetable fat, the cocoanut oil of commerce, together with about 30% fibre and moisture combined. The oil is usually separated by pressing, after grinding and heating the copra to a temperature at which the oil will readily flow. This method is termed "expression" and the product is termed "expressed oil." The method of separation known as extraction in which the oil is dissolved by use of solvents, such as benzol and other hydrocarbons, which are later recovered by complete distillation, is little used in this country. Expressed oil is in reality, a fat, being a solid of lard consistency at temperatures below 70 degrees Fahrenheit. Above its melting point, it is a true liquid of low viscosity.

The fiber, or pulp, remaining after expressing the oil, is used as a food in all branches of animal husbandry, its analysis approximating that of whole corn as a stock and poultry ration.

Its use in mixed feeds and fattening rations is fast becoming universal as it does not have the deleterious qualities of either cotton or linseed meal. About 5% fat remains in the cake in usual oil mill practice. This product is marketed either crude as it comes from the presses in cakes or sacked, with analysis attached, after being ground to about the fineness of corn meal, which products are known as copra-cake and copra meal respectively.

Expressed cocoanut oil has a double value in commerce in that it may be utilized either in soap manufacture or refined for edible purposes. Possessing the highest value for its saponification factor of any known fat or oil, it is a constituent of almost all the higher grades of toilet, bath and laundry soaps,

and kindred proprietary articles in common use. Refined, by removing free fatty acid, excess color, and volatile essential oils which cause rancidity, this oil is available for human consumption in a variety of products both alone and in combination with other foods. It enters into a host of lard substitutes, nut butters and margarines, confectioners' and bakers' shortening compounds, and replaces butter fat in



Copra in bulk. The crude copra of commerce is the dried and broken meats of the coconut. It is one of the Oriental tropics main contributions to the world's commerce. The Philippine islands is the most important producer of this commodity.

several brands of condensed milk. Europe has depended upon it for many years owing to the decrease in animal fats due to diminishing herds, and in this country each year records its increasing use as edible for similar reasons.

During the late war coconut oil was in heavy demand for its glycerine content which is released as a by-product in soap making. Great quantities of glycerine were required in the manufacture of high explosives.

Scope of the Coconut Oil Industry in the United States

An idea of the importance of the coconut oil industry, its growth and present volume may be formed from the following data taken from Government reports:

	1917	1919
Copra Imports, tons.....	183,000	168,000
Coconut Oil Imports, tons.....	81,000	140,000
U. S. Production, tons	94,000	108,000
U. S. Exports, tons	915	4,000
U. S. Consumption, tons	150,000	211,000

The above are figures representing the period during which the production of glycerine from coconut oil was very great for use in the manufacture of explosives in the prosecution of the World War. It may, however, be conservatively estimated that the domestic consumption in 1921 was 185,000 tons valued at \$30,000,000 in the crude state.

Economic Factors Governing Plant Location

The present plant is not a pioneer in its locality. It was preceded ten years by the Kaola Company which was absorbed by The Palmolive Company of Milwaukee, Wis., the latter operating a mill of a daily capacity of 35 tons copra until it was destroyed by fire in December, 1919. This plant had demonstrated the advantages of location, both as regards inbound shipments of raw material and as a distrib-

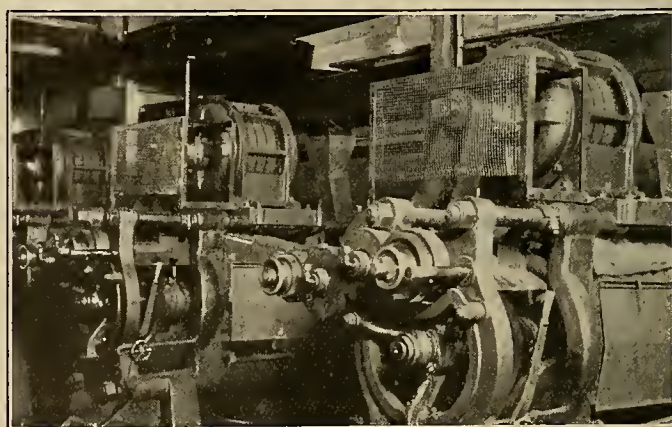
uting point for products, but owing to conditions caused by the effects of war, its management was reluctant to rebuild.

At its organization, the new company had the benefit of this previous experience as a guide and it was determined to construct a plant capable of milling 100 tons of copra per day as the first unit. It was decided to locate within the terminal limits of Portland to secure adequate and reasonable car service and switching; and upon deep water so that cargoes could be landed at its docks with the minimum of expense. The territory adjacent to Portland is famed for its stock raising and dairy industries, so that a large and growing market for oil cake was already provided. In addition there was an abundance of electric power available, labor was plentiful, and the large export tonnage of the port made certain that return cargoes from the Orient would be eagerly sought by ship operators.

It is often asked whether coconut oil can be produced as cheaply on the Pacific Coast of America as in the Orient. This is debatable, but any handicap is more than made up by the ability of the crushers here to dispose of the oil cake at attractive prices whereas in the Orient there is scarcely any local demand.

Property and Improvements

The property acquired as a site for the plant of the Portland Vegetable Oil Mills Company was occupied during the war by the Foundation Company as a wooden ship yard. Bulkheads were driven early in 1921 and the entire area of approximately five acres was filled by dredging from the adjacent channel to a height well above high water level. A transfer dock and shed were built to accommodate automatic cargo handling machinery and June 21, 1921, construction of buildings commenced. These consist of



After leaving the bulk storage bins the copra passes through these machines, known as expellers, where about 60 per cent of the oil in the copra is removed. Each machine has individual motor drive, the power of the 35-hp. motor being applied to the machine by means of a silent chain.

copra bins, mill, cake storage and refinery, the first three being combined in one structure while the last is a unit by itself.

Trackage connecting with terminals of all rail lines is provided along the front of all buildings and extends to the dock face. There is ample room for

expansion as buildings at present occupy less than half the area owned by the company.

Convenience of Electric Power

The plant stands within one thousand feet of Steam Station "E" of the Portland Railway Light & Power Co., from which current is furnished at 2300 volts to the transformers, being stepped down to 440 volts, at which it is distributed throughout the plant. From the same source, a 4-in. steam main furnishes an adequate steam supply at 185 pounds gage pressure.

City water supplies the sanitary and fire protection systems, while a remote control operated pumping unit at the dock furnishes river water for circulation in condensers and cooling tanks.

As the entire plant is operated continuously, provision for adequate illumination using 110-volt, single phase current has been made. At points where color visibility is essential, daylight lamps are provided.

Machinery and Equipment

Prompt discharge of copra cargoes from vessels lying at the dock is accomplished by means of a combined vacuum and air pressure unit with capacity of 40 tons copra per hour. Copra in the vessel's hold is conducted through two flexible metal hoses into the upper portion of a collector, whence it falls to the cone point and is fed by an air sealed gate to the boot of a bucket elevator. The elevator discharge leads alternately to two 3-ton scale hoppers which, after weighing, discharge the copra to a collecting hopper directly over the blower discharge pipe, into which it is fed by a second air sealed gate. The air in the pipe blows the copra into the copra bins, raising it fifty feet and transporting it a distance of about 300 feet. The mechanical efficiency of this unit is 30%. It requires one operator, one weigher, three pipe men in the hold to unload, weigh and store at the rate of 40 tons per hour, and the energy of $4\frac{1}{2}$ hp. per ton.

In the mill a similar unit but with a capacity of 10 tons per hour and belt-driven from a 35-hp. motor, withdraws the mill feed from the copra bins and elevates it to a 20-ton service bin at the mill roof. A belt conveyor, equipped with a magnetic head pul-

ley, discharges copra from here to an automatic scale, whence it passes to a grinder for primary crushing. A two-stage steam-jacketed cooker is fed by gravity from the grinder discharge. This cooker is belt-driven and its discharge is conveyed and fed to seven oil expellers, each driven through silent chain from a 35-hp. motor. Here the oil content of the feed is reduced to such a degree that the resulting expeller cake contains about $25\frac{1}{2}$ oil, sufficiently dry for fine grinding. This cake is conveyed to a boot and elevated to the mill roof, while the oil flows, in a launder, from the expellers to a 1,000-gallon collecting tank in the pit. At this point the first stage of the milling operation is complete.

In the second stage, the reject expeller cake discharged at the elevator head is first disintegrated in a cylindrical picker, passed over a second magnetic pulley, and fed to an attrition mill driven directly by two 40-hp. motors running in opposite directions. Grinding is finished by passing the discharge through a stack of five mill rolls driven by silent chain from a 75-hp. slip ring motor. The discharge from the rolls is conveyed to the top section of a vertical 3-stage cooker, belt-driven. When the ground copra has reached the outlet of the bottom section of this cooker it is charged into hydraulic press cages and undergoes final pressing.

Copra meal is discharged from the three-stage cooker into a cake former, hydraulically operated, whence it is placed in layers of equal volume in an empty cage locked in the loading press. A drain plate is introduced between each layer as it is deposited in the cage. When the cage has been charged completely, it is transferred on a carriage to one of the four finishing presses and pressure applied first at 750 lb. per square inch, then at 4,000 lb. per square inch until oil ceases to flow when the pressure is released, withdrawing the press plunger, and the spent cake discharged after transferring the cage to the discharging press. Spent cake passes through a chute onto the floor of the cake storage building. The oil from the hydraulic presses flows in a launder to the same collecting tank as that receiving the expeller oil.

The crude pressed oil is then pumped through plate and frame filter presses, clothed with cotton



Three of the immense storage tanks (right) and top of the two 50-ton dehydrating cones (left center).

duck. The filtered oil is pumped to storage in the refinery building, passing en route through a liquid meter thermostatically controlled. Both pumps are belt-driven from the same 7½-hp. motor. Filter cake is periodically removed from the filter presses and charged into the meal from the expellers to be repressed.

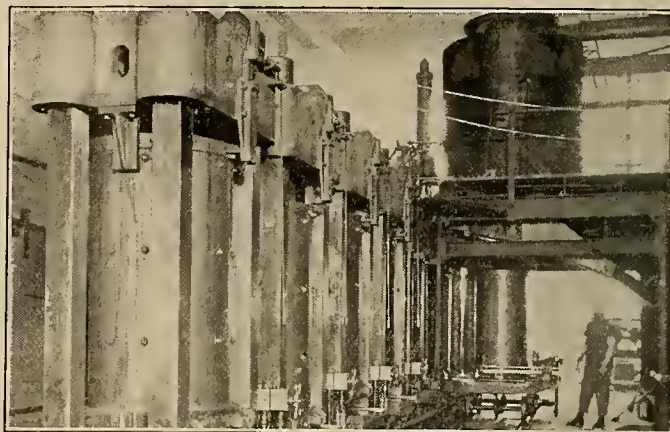
When sacked meal is required, the hydraulic cake is passed directly into a four-roll cake breaker whence it is elevated to the top of cake storage building. The elevator discharges into a grinder which in turn passes the ground cake into service bin. Two bran packers draw from the service bin and deliver the meal in 100-lb. sacks to either floor for storage or shipment. One 25-hp. motor belted to counter shaft operates breaker and elevator and one 15-hp. motor drives the grinder, conveyors, and packers.

Shop equipment, lathe, drill press, and tool grinder are belt-driven from a 10-hp. motor.

Production control data are compiled for each 8-hour shift from the readings of the automatic mill scale and the liquid meter. These figures are checked

heated by interior steam coils. Loading facilities allow of filling at the rate of one tank car per hour.

Cocoonut oil is processed to meet standard specifications which prescribe the maxima of fatty acid, moisture, impurities and color components. Mill and refining processes are therefore carried out under rigid laboratory control and shipping documents are invariably accompanied by certified analysis. A well-



Final pressing is accomplished in six vertical hydraulic presses where the copra with oil partially removed is subjected to a pressure of 4,000 pounds per square inch. One of the cookers is shown in upper background.

equipped control laboratory with certified oil chemist in charge, is housed in a small building adjacent to the refinery.

Success in the First Year

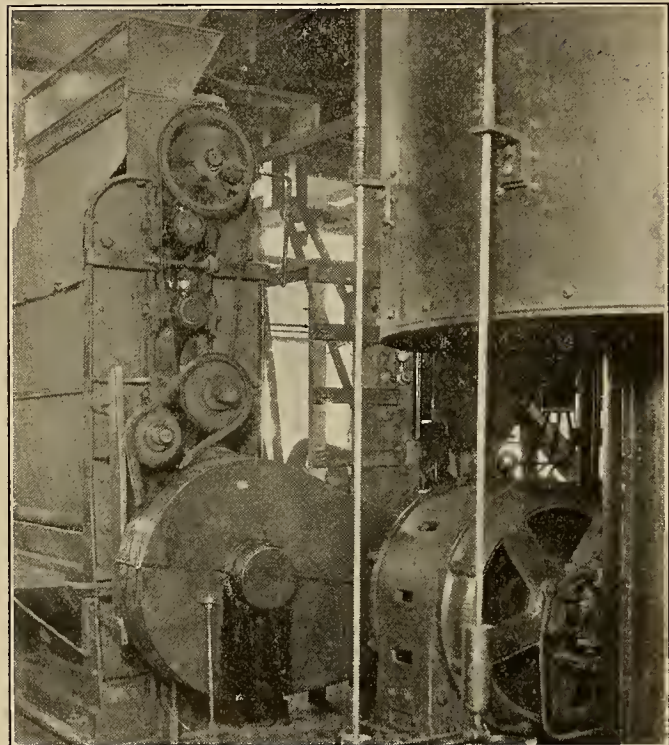
Aside from a small clerical force in the office, the plant is operated to its full capacity by a maximum force of 40 men. Its annual pay-roll is about \$50,000. During the six months of its operation it has crushed 9,700 tons copra and produced 6,300 tons of oil and 3,400 tons cake. The entire output is sold for two months in advance and a satisfactory dividend has been earned and declared from the profits of its first six months' operation. The management anticipates an even better record both in production and profits for the remainder of the year, which should be reflected by sales to the value of \$2,500,000 for the initial 12 months period of operation.

RAILWAY ELECTRIFICATION IN CHILE

The Nitrate Railways Co. (Ltd.), a British corporation operating the principal railway system of the Province of Tarapaca, is planning to go ahead with the electrification of the Iquique-La Carpas section—a stretch of about 17 miles with heavy grades.

The proposed work was covered by a contract made between the Nitrate Railway Co. and the Chilean Government in July, 1921. Although this contract has been declared void by the Chilean Congress, representatives of the state railway state publicly that so far as the company is concerned the contract is in full force and effect.

The preliminary estimate of the cost of the work is £2,000,000, and an engineer has arrived from England to work up the necessary technical data for the preparation of detailed plans.



The grinding process is finished by passing through a stack of five 60-inch by 18-inch mill rolls driven by silent chain from a 75-hp. slip ring induction motor. One of the hydraulic accumulators is partially shown on the right.

periodically against shipping weights of oil and results agree closely.

Refining Processes

The tankage section of the refinery building provides a storage capacity of nearly 500,000 gallons. Two 50-ton capacity neutralizing cones, two 10-ton vacuum dehydrating drums, one 10-ton steel vacuum deodorizing drum, and one 10-ton cooling drum comprise the process tanks. There are several smaller service and collecting tanks. All oil tanks are

Some of the Major Reasons Why Employes Quit Their Jobs

The Irritating Losses Through an Excessive Labor Turnover Can Be Prevented If the Employer Understands the Reasons Which are Back of the Trouble and the Influences Which Make for Discouragement or Ambition

By GEO. H. DEKAY, JR.

Director of Employment Service, Y. M. C. A., San Francisco

TWO general classifications will cover reasons why men leave their positions. These will be found to be either voluntary or involuntary and, inasmuch as the second classification covers discharges, lay-offs and other reasons arising from acts of the management it can be passed for consideration of reasons arising within the minds of the employes. These reasons will be found to be as varied as mankind itself but may still be quite definitely classified.

Wages and Working Conditions

Quite naturally the wage question is uppermost. From the dawn of commercial history man has given his services in exchange for some commodity desired or needed by himself, but whether he exchanged his strength for a string of beads or a weekly pay check, he has always been concerned over the amount coming to him. Men willingly risk life itself if the gain involved is sufficiently attractive but, unless this gain be proportionate to the risk involved, it will not be an inducement. The hardship endured by the Yukon gold miners is a good illustration of man's readiness to accept risks for large financial returns. However, this question of compensation may be somewhat offset by other attractions under the classification of "conditions of work."

These enter almost as largely into consideration as wages and very frequently take first rank. Many times men will willingly work at a lower wage where they are contented with surroundings or greatly interested in their occupation, rather than at a higher price but in an unsettled or uncomfortable environment. These conditions will vary with the temperament of the individual. Anything tending to create fear, whether of loss of life or limb or simply fear of a foreman or fellow worker will cause a man to give up his job. In the shipbuilding plants during the war any bad accident would result in some of the more cautious-minded throwing up their jobs rather than take similar chances. The same holds true in any industrial organization and more so where safety appliances are not too generally used.

Allowing for Dispositions

The stolid laboring type with limited mentality and imagination is not bothered by plans for advancement; his daily bread and a place to sleep and keep his family mark his ambitions. For this man the ladder of success stops at the first rung and his life is shadowed by the fear of discharge rather than ideas of quitting. Given regular routine employment well directed, and he remains a steady worker; but if this routine be upset or too much of a tax be placed on his mind, he ceases to function and feels it necessary to change for the familiar routine.

The man with plans for the years ahead considers where his occupation is leading him and when necessary changes for better opportunities of advancement if he feels that he will not receive these chances where he is working. But no matter how dull or how intelligent a man may be, he will react to pleasant or unpleasant surroundings. If plant "A" has plenty of light, ventilation, safety appliances and sanitary conveniences, it will hold its employes better than plant "B," if the latter is of the type too frequently found a few years ago, with dark working rooms, poor ventilation and sanitation and no consideration for personal safety.

The Cost of a Poor Foreman

The best of surroundings and conditions cannot overcome the disagreeable personalities of the management. One Pacific Coast corporation has had a very heavy turnover in its shipping department due to a profane and domineering sub-foreman who has cost his employers heavily in men and money, but still retains his position. The fault lies in not having a proper method of clearing problems with employes and in not giving careful investigation to causes for too frequent discharges.

Another large corporation finds it a common occurrence to have six and eight men in succession drop from the pay line and quit and the number of ex-employes in its city is beyond all reason. Its men quit and continue to do so on account of hours and wages and the personality of one executive. To the firm they give various reasons, when they give any, but to others in their confidence they tell the real reason for their acts and tell them forcibly enough to give credence to their tales, especially when the same story is repeated by man after man.

Preventing Discouragement

Too often the employe is not given sufficient training or information regarding his work, its place in the production scheme or what is expected from him. Such a man may make a few mistakes, grow discouraged by lack of progress and, feeling that he is making a failure and is liable to discharge, "beat them to it" and quit. A little more time spent in instruction or a day or so under an experienced employe might create an entirely different viewpoint and an effective worker. This is being handled in many places by means of lectures given to the employes accompanied by motion pictures illustrating phases of manufacturing and methods of production. It is serving to create an intelligent group of workers who understand the end toward which they are working and take pride in their part.

Men who respond best to methodical systems in working react unfavorably to any hit or miss pro-

gram in laying out their work. In one wholesale house opening at 7:30 a.m. the entire output of seven men in one of the shipping departments at nine in the morning recently consisted of one small package placed on a delivery truck. The foreman was not given his orders and working schedule sufficiently in advance to allow him to lay out the day's work before the men arrived. This fault, which is common to other departments also, is costing the company many thousands of dollars' waste time every year besides discouraging the employes from applying themselves and giving full value in their efforts. A few weeks at this sort of employment and the thinking employe changes for a better organized position where his efforts really count.

The Influence of Home Conditions

Some men are only concerned about earning a living, securing some pleasures and possibly saving a bit for the future; others have families whose welfare must also be considered. Then it becomes necessary to look into housing conditions, schooling, sanitation, the distance from the home to the work and the means of transportation. During the war period of unheard-of wages, when silk shirts replaced the flannel and the working man had trouble in finding a place to park his newly acquired automobile, he did not object to having to travel some distance in his new splendor. But now that the flannel has again come into its own and the automobile payments have been finished by strangers, distance and carfare are once more serious items.

Thus housing conditions play an important part in the employment scheme and in holding men on their jobs. If a workman (and the same applies as forcibly to the clerical class) is forced to live an unreasonable distance from his work in order to secure reasonable rentals, healthy surroundings and educational opportunities for his family, he will inevitably try to secure employment where these conditions exist and will hold his job only until he can secure such work. That this item is understood and recognized by his employers, is shown in the homes built by large organizations and furnished to their employes at reasonable rentals or sold on favorable terms. Provided with modern conveniences, attractively built and well finished, they play a very important part in binding the man to his work. If his family is suitably located and his home environment is pleasant, he will be a better workman and give better results.

Sometimes the part in a man's industrial life that is governed by domestic conditions is not fully understood or considered and his general efficiency is impaired where it could be increased by helping him solve some family problems and cares. Men who have been furnished good living accommodations, assisted to purchase their homes or allowed to buy stock in their company will take a personal pride in their work and in a way become individual efficiency managers for the company. Such men form the nucleus of any organization and play an important part in determining profits and dividends.

Personal Reasons for Giving Up

The "loan shark evil" which has sapped the life and energy of many a good worker has but recently been considered seriously by employers as a feature in the employe's efficiency. This evil has of recent years been forcibly brought to the public attention and means taken by both private and public organizations to offer a remedy. Tales of employes hounded for years by these sharks, working night and day to try and escape from their clutches, sometimes resorting to "borrowing" from the firm's money and sometimes resorting to suicide as a solution, have resulted in various methods being inaugurated to free the victim. In some instances the employers have established a loan fund on which the employe may draw when necessary or have placed their legal departments at the employe's disposal for counsel and advice or legal help when needed. In other instances a quasi-public loan association has been formed and sponsored by various business men to offer the working man the same opportunity to secure small loans in a business-like and secure manner. Such an institution is the San Francisco Remedial Loan Association backed by capital from some of San Francisco's leading public spirited citizens. Here the working man may secure temporary financial assistance at a reasonable rate of interest and with perfect security that he will be protected at all times. With these remedies at hand the employed will not feel the discouragement of debts that he cannot seem to overcome and that he may try to avoid through leaving entirely.

Personal health always figures prominently with the employe and must often be considered as a necessity for change of occupation. Medical attention furnished at the right time can often help overcome disabilities which may later prove to be a necessary cause for losing a good employe.

Mixing Nationalities

In many large industries the employes speak a larger variety of languages than ever heard in Babel. The history of that ancient building enterprise shows that the newly created races didn't hang together very long and they have shown no great inclination to do so since. Danes, Swedes and Finns will not mingle satisfactorily, neither will an American work with an Oriental; the commercial dairies find it necessary to be very explicit in hiring milkers, to state the nationality that is at work for them, as the introduction of an outsider simply means trouble. In the South the color line is closely drawn and in other sections the racial question must be skillfully handled to avoid constant friction. Likewise some nationalities are of a calm phlegmatic nature, well fitted for routine work that does not tax the imagination or strain the mentality. They work well as long as they are shown what to do and are firmly handled; generally they have one or two leaders from whom they secure their ideas and whose lead they will follow almost blindly. Other nationalities of a more temperamental nature do best in an atmosphere that creates diversion; they work harder if they have

some goal in sight, whether a certain amount to produce within a given time unit or a rivalry between two sections. Any attempt to exchange either race would meet with poor success. To use the old saying, "You cannot fit a square peg into a round hole," and the same applies also to a square head.

Locating the Cause of the Trouble

The sources are varied from which the men's reasons for quitting can be obtained, the most feasible method being from report cards containing the personal data of each employe, which are closed before he receives his final pay. This method, if fully carried out, will give all vital statistics covering each employe, with proper space for reasons and notations when he leaves his employment. To be properly handled, all men leaving an organization should be cleared through a central employment department where each case can be individually considered. Such a course can often serve to clear some minor grievance and hold a trained employe—or he can be transferred to another department where he may give better service and be better contented. But, regardless of the actions taken, valuable information can be secured regarding causes for labor turnover.

It is true that the employe may not give his real reasons for leaving to a company official; sometimes through ignorance of our language, sometimes through fear of a "white collar," sometimes because the informant may fear harm from the source complained of or that he may jeopardize his chances for securing employment in the same locality or for many individual reasons. But close cooperation between the personnel or employment department and the workmen will clear up many causes.

One cause for the shifting of employes may be charged directly against the employer and reacts against him directly. This comes from the policy of bidding for skilled men through inducements of higher wages. This system caused so much trouble and unsettled conditions to such an extent in some of the plants engaged in supplying Government departments during the war, that a central department was created to fix wage scales throughout the country in some occupations. All items pertaining to wage rates were cleared daily through this office, giving a uniform rate, lowering turnover and increasing production through stabilizing conditions among many plants.

Expensive Mistakes

It is impossible to estimate the yearly loss in our country caused by unnecessary turnover. In individual organizations, the cost of placing a man on the job varies from a few dollars to many hundreds, where picked men are given intensive training. In a bulletin issued in 1919 by the Metropolitan Life Insurance Company of New York, the statement is made that the Dennison Manufacturing Company saved over \$25,000 in two years through reduction of labor turnover among its employes. Likewise the Ford company reduced its discharges from 8,390 in 1913 to 27 in 1915 through centralizing its employment department and through transferring a man as many times as necessary until his proper place could be found.

Any study given to this subject or any method worked out that will tend to retain a man in his place, will react directly on the profit and loss statement and will merit careful consideration.

Economic Factors Which Determine Power Expenditures

The Engineer Must Determine If the Investment Planned Will Pay Interest on the Money Expended Through a Saving in Expense or Additional Revenue Before He Recommends New Power Construction Work

By L. J. MOORE

Executive Engineer, San Joaquin Light and Power Corporation

AS a general rule every engineering work should justify its existence. In the business of providing electrical service to the public, new lines or extensions should bring in a financial return which will pay taxes, depreciation, and all such charges on the investment and also pay a reasonable rate of interest. Or, improvements to plants or lines should provide savings in expenses, which will pay the same return on their cost.

There are, of course, exceptions to all rules, and in some cases pioneering must be done. Some extensions are made when the immediate return is not sufficient to justify the expense; but prospects may be such that it is not easy to foresee that in a short time the desired result will be obtained. In other lines of work there often arise cases of certain works being necessary, as in municipal undertakings for sewage disposal, etc., for the interest of public health where there are no financial returns possible. No one

would deny the advisability of carrying on these undertakings. However, the converse of our proposition is always true. If the financial return on any engineering work is sufficient the work is justified and economical.

The Economic Angle to Engineering

The successful engineer must first of all be an economist. He should leave nothing to chance; but must have sufficient vision to be always considering the future. He will have many proposals presented to him, and many ideas will occur to him; but he is not doing his full duty to the organization which gives him employment unless he considers the problems from all possible angles. He must, however, be of an open mind and able to recognize real value when it appears, regardless of the source.

The best way to show the working out of economic principles is perhaps to give a few examples.

Therefore, the following from actual practice are submitted.

Spending \$100,000 to Save Money

A certain company was constructing a new hydroelectric power house. The construction period would extend over almost two years. Power was required for the construction operations. The generating capacity of the completed plant was such that a transmission line of considerable carrying capacity was needed but apparently not needed until the plant should be finished because an 11,000-volt distribution line already reached the site. The size of conductor on the distribution line was moderately large; but a glance at the map showed a distance from the substation of some thirty miles. This called for more careful attention and so an estimate of the cost of the transmission line was prepared and found to be about \$100,000. Calculations were made of the power losses over both lines under conditions of construction and carrying the load already on the distribution line. A saving per year of very close to \$15,000 was found to occur if the transmission line were constructed. This amount is seen to be 15% on the investment and about equal to the annual charges on the line as enumerated below:

Interest	8%	
Depreciation	2.78%	
Taxes	1.5%	
Maintenance	3%	15.28%

It is evident then that the line would pay its way and should be constructed at once, on account of the very much better service in voltage delivered than would be possible with the distribution line.

Calculating Future Returns

Another case which shows the principle from a different angle is as follows:

A certain consumer had an installation of 750 hp. at a distance of practically five miles from a substation. The distribution voltage from the substation was 11,000 volts. It was the consumer's plan to increase his demand to as much as probably 3,000 hp. This, however, was a very seasonal demand operating for not over 3½ months per year. Consideration was given to the size of conductor for carrying the load and to the question as to whether or not it was best to carry the load on the distribution line, or to install a substation stepping down from the 66,000-volt line which went directly past the installation. An old rule which was established many years ago says that it is economical to transmit power one mile for each 1,000 volts of the pressure on the line. According to this rule, it would be economical to continue to carry this particular load without any additional substation facilities. However, some calculations have been made, and the results are given in the following tables:

TABLE NO. 1

No. 2 H.D.B.C. Wire, 3-Phase Line, 5 Miles Long

No. 2—117-amp. capacity—cost approx. \$4,147 without poles.

6600 V—Y—(11,500 v. between lines) P.F. of load, 100%—Syn. motors.

LOAD	Kw. Loss	Kw-hr. Loss 3½ months 2,520 hr.	Volts Loss to Neutral	Cost of Pr. loss @ 1c. per kw-hr.
750 hp.	1.76%		148 v.	
560 kw.	9.88	24,900	2.24%	\$249.00
1500 hp.	3.42%		296 v.	
1120 kw.	38.3	96,600	4.48	\$966.00
2250 hp.	5.3%		445 v.	
1680 kw.	89.0	224,000	6.72	\$2240.00
3000 hp.	6.95%		592 v.	
2240 kw.	155.5	391,860	8.96%	\$3918.60

TABLE NO. 2

No. 1 O.H.D.B.C. Wire, 3-Phase Line, 5 Miles Long

169-amp. carrying capacity—costs approx. \$2,800 to change wire.

LOAD	Kw. Loss	Kw-hr. Loss 3½ months 2,520 hr.	Volts Loss to Neutral	Saving in Power loss @ 1c per kw-hr.	Fixed charges on additional invest. @ 15%
750 hp.	1.1%		1.85%		
560 kw.	6.19	15,600	122 v.	\$93.00	\$420.00
1500 hp.	2.14%		3.7%		
1120 kw.	24.0	60,400	244 v.	\$362.00	\$420.00
2250 hp.	3.31%		5.55%		
1680 kw.	55.7	140,000	366 v.	\$840.00	\$420.00
3000 hp.	4.35%		7.38%		
2240 kw.	97.4	245,000	487 v.	\$1468.60	\$420.00

TABLE NO. 3

No. 3 O.H.D.B.C. Wire, 3-Phase Line, 5 Miles Long

240-amp. carrying capacity—costs approx. \$3050 more than No. 1-O

6600 V—Y—(11,500 v. between lines) P.F. of load, 100%—Syn. motors.

LOAD	Kw. Loss	Kw-hr. Loss 3½ months 2,520 hr.	Volts Loss to Neutral	Saving in Power Loss over 1-O @ 1c per kw-hr.	Fixed charges t 15% on additional cost over No. 1-O
1680 kw.	2.09%		4.87%		
	35.2	88,700	317 v.	\$515.00	\$464.00
2240 kw.	2.77%		6.4%		
	62.0	156,000	422 v.	\$890.00	\$464.00

The wire already in position was No. 2 bare copper, and the calculations have been made of the power losses using this conductor and two larger sizes for the particular load in question, and also its increased value when the full installation would be installed.

It will be noted that to increase the present wire of No. 2 copper to No. 1-0 copper will cost \$420 per year, while the saving on the present load would only be \$93 per year. This data is taken from table No. 2. It would not, therefore, be economical for the present load to make any change in the conductor. In fact from a glance at table No. 2, it is seen that the saving in power loss does not equal the additional fixed charges until a load of something over 1,500 hp. has been reached on the line; but somewhere between 1,500 and 2,250 hp. the wires should be changed to No. 1-0 copper.

From table No. 3, when a load of 2,250 hp. has been reached, it is apparently economical to increase up to at least No. 3-0 copper. If the calculations were carried on up to No. 4-0 or thereabouts, it might be found that for 3,000 hp. it might be economical to go somewhat larger than 3-0 copper. However, to increase to No. 3-0 wire, for example, would only cost something like \$5,850, while to install a substation immediately at the load would cost probably not less than \$25,000. This all bears out the old rule of 1,000 volts per mile for transmission, and shows that it is not economical to make any change in the conductor until the load has been materially increased.

Modifying Circumstances

An interesting point in connection with this particular case is that if the load had continued for say, seven months continuously instead of 3½, the power losses in all cases would have been double, and the savings double, which would have worked out to the use of larger sizes of wire or, in other words, on account of the increased savings, greater expenditures would have been justified to effect the savings. This is due simply to the fact that interest, depreciation, taxes, etc., go on continuously, while power losses occur only when load is being drawn over the line, and if the period of time during which the load is carried is short in each year, heavier losses for the time being can be allowed, than if they extended over longer periods.

Instances of this sort could be enumerated without number; but they will all lead to the same conclusion that any public utility company selling service of any kind, must look into the different problems presented to it in some such manner as above noted. In this way only can possible financial losses be prevented, and uneconomical extensions and expenditures be averted.

Is There a Future in the Radio Business for the Dealer?

If the Wireless Boom Is Not to Prove a Boomerang But Is to Develop into a Business of Permanent Importance, It Must Be Placed on the Same Stable Basis of Merchandising as Other Standard Electrical Equipment

By TRACY BIBBINS,
President, Pacific States Electric Company

ALMOST over night the radio industry has changed from a modest group of inventors and manufacturers, earnestly and quietly overcoming difficulties and developing a new business, into a riotous, clamoring and heterogeneous collection of producers, distributors and buyers. The grip of radio on the imagination and the widespread publicity which this invention has received, has stamped the American public more completely than any gold rush or any oil find ever has.

Everybody's Doing It

A list of the various classes of retailers who are selling radio supplies, just compiled by the American Radio Journal, indicates clearly the disorganized condition which prevails. The list includes the following dealers: hardware, phonograph, electrical, department stores, plumbing, sporting goods, stationery and toys, drug, radio exclusive, jewelry, haberdashers, mail order houses, dry goods and general stores.

In the manufacturing field the condition is much the same. Many producers of commodities which have no natural similarity with radio have been influenced by the apparently fabulous opportunities offered, and have turned to its manufacture without the proper experience or facilities. The result of this type of manufacture and distribution can only be the circulation of products which will give unsatisfactory service, weaken public confidence and interest and cause the demand to lessen.

Dangers of a Boom Condition

From the standpoint of the electrical industry, the radio business requires the application of considerable caution. There can be no doubt that radio equipment will become an important item for distribution by electrical dealers as soon as the radio industry has become established. I believe that radio has come to stay and that the demand for radio supplies will persist. But that demand as applied to the near future will depend upon the speed with which the radio industry becomes organized as to production and distribution, and in the meantime many electrical dealers are laying themselves open to disaster by neglecting their established lines of electrical equipment. The old saying that "all is not gold that glitters" certainly applies to this situation. The radio business is glittering so brightly before the dazzled eyes of many electrical dealers that they are casting all caution and conservative business judgment to the winds, and turning aside from the sound and well known lines of electrical appliances and materials to sell a new and untried commodity.

Two undesirable effects are sure to follow such action. By neglecting their regular customers—people who are interested primarily in buying electrical appliances and equipment—dealers are likely to lose trade which is of permanent value, and which represents one of the definite assets of their business. Also, the sale of material of doubtful value—and a substantial part of the radio material now for sale is of that sort—is a dangerous practice. Dealers are apt to lose caste and even forfeit the good will of their customers by distributing shoddy and unserviceable radio equipment.

The Value of Stable Business

The sale of standard electrical appliances and materials shows, as a maximum performance, an increase of fifteen per cent yearly. In other words, a dealer will double his volume approximately every five years, if normal conditions prevail. Under such circumstances, the sale and distribution of recognized and dependable lines of electrical appliances and equipment presents a very attractive opportunity and one which dealers should not neglect.

Another point worthy of mention here is the pyramiding of radio orders. A buyer goes to a dealer for a certain piece of radio equipment, which the dealer is out of or hasn't been able to get,—the dealer says he'll order it, and the buyer says all right. But he wants that part right away so he goes to several other dealers and goes through the same procedure, with the result that perhaps a half-dozen orders have been placed for the same piece of equipment and five out of six of the dealers are going to have unsold equipment on their hands. It is business of this sort which dealers in radio supplies will have to guard against if they don't want to stand serious losses.

A Good Future in Radio

To sum up, then: I believe that the radio business, as soon as it outgrows certain deficiencies which are inherent to a new industry and the result of an abnormal demand, will be a very good and desirable line for electrical dealers to carry. But I want to lay particular emphasis on the necessity of stabilizing the radio business and of the advisability, as far as dealers are concerned, of distributing only those items of radio equipment about whose worth there can be no question. Further, I want to call attention to the need of putting radio in its proper place in relation to other lines of electrical merchandise. It should receive its share of sales attention, but established lines of electrical equipment should not be neglected for it.

Three Methods of Manufacturer to Consumer Merchandising

The Second of a Series of Articles Devoted to an Analysis of the Modern Tendencies in the Marketing of Products and the Advantages of Different Types of Distribution Methods as Applied to Various Classes of Goods

By E. A. KINCAID

WHILE there is a tendency, both past and present, to obtain distribution through the existing channels of distribution, manufacturers not infrequently sell their products directly to consumers, without the intervention of a middleman, through one of the following channels: (a) to the consumer by means of canvassers or solicitors; (b) to the consumer by mail, and (c) through the manufacturer's own retail stores. Each of these routes to the consumer represent distinctly modern tendencies in distribution—departures from the orthodox systems of distribution—which are by no means the result of accident. On the other hand, these new methods of distribution are the direct result of economic problems of manufacturers which press for solution. The manufacturer is not fond of innovations for their own sake and he is not actuated by curiosity and a desire for experimentation. Neither does he seek to destroy the middleman nor in any way weaken his position except insofar as may be necessary to preserve his own industry. The modern manufacturer uses the scientific approach to his problems of distribution. Through his own advertising department or through advertising agencies data are gathered and sifted and in this manner the correct principles of a sound system of distribution are worked out. When the data are carefully gathered and properly interpreted the true principles of marketing come to light. The method is not only scientific but it is in harmony with these rules which have been the means of success of so many great business men. While socialists and others have attributed the great fortunes of some of our successful business men to luck, the fact is that nothing could be further from the truth. Most of the great achievements in the field of industry or in business are the result of adherence to sound principles. When matters have gone awry the successful business man turns to the principles upon which his enterprise has been built or to their application in order to find explanation for his troubles. There is an ever-growing tendency to find out the true principles of procedure in business and to build business on fundamentals revealed from research.

Distribution direct to the consumer by canvassers or solicitors is not a new method of distribution. In fact it is one of the oldest of those in use in this country. The tin industry of the United States became assured of success because of the selling abilities of the Yankee peddlers of tinware. The work of these peddlers in opening up markets for tinware gave Connecticut manufacturers the great impetus of an early start which has had so much to do with the concentration of other large industries there.

While distribution by means of peddlers or can-

vassers is old, it has remained for modern manufacturers to adapt it to present-day problems. One of the notable instances of selling directly to the consumer by means of canvassers or solicitors is that of the Fuller Brush Company. This company rejected the plan of selling through dealers, the easiest way to reach the consumer, because it is sought to make Fuller brushes into specialties which would stand out from the common run of brushes. The Company proposed to manufacture superior goods and to have a brush for every purpose. In order to educate the public as to the merit of its goods the Company had to take over the distribution of its brushes and put the selling in the hands of highly trained specialty salesmen. To build up a market in this way the Fuller Brush Company had to start in a small way, train a staff of salesmen and be content with a small initial volume of business for the sake of possibility of a large ultimate market—a market which, once established, would be in the exclusive control of the manufacturer.

Success of Fuller Brush Company

The Fuller Brush Company has succeeded in accomplishing this difficult task and no middleman stands between it and the consumers of its products. The manufacturer is in control of production and distribution and the co-ordination of the two is thus vastly simplified. The Fuller Brush Company has trained and placed in the field a staff of 3,500 selling representatives which has been trained to put the Fuller brush in a class by itself. The work of the Company's selling representatives is backed up by an effective advertising campaign and the co-ordination of the personal selling with the advertising has been so successful, that the sales of the Company have grown from \$184,525 in 1913 to \$8,367,474 in 1921. The advertising appropriation in 1921 amounted to \$275,000, and it seems to have been spent in an effective way. The results obtained by the Fuller Brush Company are sufficient proof of what can be done with this method of distribution. Had the Company chosen to distribute through dealers it would have avoided the problem of selecting and training its staff of solicitors and it might have left the advertising to dealers. As compensation for the assumption of the selling function with all of its attendant burdens the Fuller Brush Company has access to a market which is exclusively within its control, a condition which has placed its manufacturing business on a stable basis and made it independent of middlemen.

The Use of the Mails

The problems which the Fuller Brush Company faced were fundamental and typical in that many

manufacturers are confronted with the same problems. These problems are of a two-fold character, (1) the obtaining of that volume of sales which will permit of production at the lowest cost of production per unit of output, and (2) a more economical method of gaining this volume. The process of gaining this more efficient distribution has come frequently to mean distribution through channels other than the customary one from manufacturer to jobber to retailer. The Witte Engine Works is another example of a manufacturing concern that has sought more direct access to the consumer. However, it did not adopt the use of canvassers, but chose the mail route. In adopting selling by mail the Witte Engine Works was led into the field of marketing and it was thereafter both a manufacturing and a distributing organization. When a manufacturer enters into the distribution of his own product he has first of all to settle the marketing problem and then to work out the merchandising problems—those problems which relate to the free flow of the factory output through the channel that has been selected. The chief problem in merchandising is selling. The Fuller Brush Company chose solicitors and advertising was made the instrumentality for effective merchandising. The Witte Engine Works chose the mail route and used advertising as the chief instrument for effective merchandising. The Witte Engine Works manufactured a gas engine and it looked to the farm market for one of its promising outlets. The farm market was reached by means of advertising in farm journals but the advertising had to be worked out with great care for it is not an easy matter to build up a market for such goods as engines by the mail route. To make advertising do the work of personal salesmanship was the task assumed by the Witte people.

Making the Customer Sell

The work began in a small way and was made to succeed, for every customer was converted into a salesman for the company's product. This was accomplished by emphasis on service and quality. The engine was of such quality and the merchandising policies of the company were of such a character that it was possible to gain and hold the confidence of every buyer. On the foundation of confidence the company built up a market for its product. The possibilities of such a market were recognized by the officials of the company and it was known that the manufacturing end of the business did not so much require a large number of buyers as a sufficient number of satisfied buyers. Suppose the Witte Engine Works was specializing in a gas engine costing \$500. Two thousand buyers a year would insure a business of \$1,000,000, quite aside from sales of parts for repairs. The officials of the company recognized the principle involved in this illustration and they have realized it in practice. A sufficient number of buyers have been reached by mail to provide a stable business for the factory and the business is expanding.

Another Example of Selling by Mail

The principles upon which the success of the Witte Engine Works was built have been applied with equal success by the Ottawa Manufacturing Company, a Kansas corporation which manufactures log saws. It is another case of selling by mail backed up by advertising. This company was induced to adopt this method of distribution as the result of definite economic problems. Such products as gas engines and log saws do not find many buyers in any one locality. Moreover the lifetime of such goods is comparatively long. If the goods were handled by dealers the volume of sales to be expected would not be great. Because of this fact it is not easy to induce retailers to carry such goods in stock and it is not safe to leave to them the pushing of the goods by other methods than actual exhibition of the product. The best chance of the manufacturer to secure effective distribution through dealers will come after his goods have been advertised and a demand created. Meanwhile the manufacturing business cannot go ahead without orders.

The experience of the Witte Engine Works and the Ottawa Manufacturing Company are instances of what a small and struggling manufacturing business can do with selling by mail and effective advertising. Remote regions can be reached and demand can be established in localities that could not be reached through dealers. A wider market is made available—a market which can be reached directly from the factory—and the problem of interesting dealers in widely scattered regions can be avoided. Thus it has come about that young and struggling industries have found places in the sun and it is certain that they would never have made places for themselves with any other system of distribution. Selling by mail backed up by advertising is thus responsible for the origin and development of new manufacturing enterprises.

Manufacturers' Retail Stores

A third method of selling direct to the consumer is by means of the manufacturer's own retail stores. When a manufacturer operates his own retail stores he becomes a middleman in a very different way than any so far considered. Factory distribution by means of solicitors and by mail does not constitute an invasion of the field of the middleman so much as an evasion of the middleman. But distribution through the manufacturer's stores is a direct invasion of the recognized field of the retailer. Practical activities in this field vary a good deal. Some manufacturers operate one or more retail stores for the purpose of forming contacts with the consumers of their goods and thus studying demand at first hand. In this way information is obtained which makes it possible to educate dealers with respect to the merchandising possibilities of their goods. Other manufacturers undertake all or an important part of the distribution of their goods by means of a chain of retail establishments exclusively owned and strategically located. The managers of these stores receive sal-

aries as employes and they are in no sense independent merchants. Still other manufacturers enter into exclusive selling arrangements with select stores which become affiliated with the manufacturing corporation by means of stock ownership. The Winchester Repeating Arms Company operates stores of this character. The Regal Shoe Company, Hanan & Son and other manufacturers operate retail stores. The W. L. Douglas Shoe Company operates retail stores but it does not distribute the factory output exclusively through these stores. It will and does sell to independent retailers. On the other hand Browning, King & Company manufacture clothing and sell it through their own stores exclusively.

Reasons for the Invasion

The main economic force back of the manufacturer's invasion of the field of retail distribution has been the desire for a greater volume of sales. Often a greater volume of sales has been absolutely essential to the continued operation of the factory on a paying basis. A secondary consideration has been the necessity of rendering service which is an indispensable factor to effective selling. Concerns like the Yawman & Erbe Manufacturing Company have found it necessary to enter the retail field because the demand for their products depended upon a knowledge of correct filing methods. Not infrequently the manufacturer's product is of such a character that its distribution cannot be left to the independent middleman. The dealer is not equipped to do efficient merchandising and his inability in this respect may so reduce the volume of sales as to menace the prosperity of the manufacturing end of a business. If the manufacturer operates his own retail stores he is in a position to deal effectively with a number of merchandising problems such as the resale price of his goods, the coordination of advertising and selling, the problem of substitution, the whims of consumers, discovery of defects in his goods, discovery of new selling points, a sound knowledge of retail selling costs, the determination of proper margins and mark-ups, and the training of traveling salesmen. When the manufacturer has had opportunity to study his own goods with respect to the various problems he is in a position to bring home to the independent retailer his merchandising possibilities and thus pave the way for a shift to independent retailers in whole or in part.

Disadvantages of This Method

While these advantages are obvious there are some equally evident disadvantages of distribution by the manufacturer through his own stores. The Kelly-Springfield Tire Company recently abandoned its retail branches chiefly because of the economies which could be realized in that way. The action of this company but serves to emphasize the fact that manufacturers' retail stores have often been operated at a loss. The stores must be highly efficient to gain all the advantages which have been mentioned and to make them models of their kind has proved most expensive. Furthermore, when a manufacturer operates his own stores and also looks to

independent retailers as a partial outlet he is subjected to the necessity of competing with his own dealers. The Sherwin-Williams Company has sought to avoid this problem by refusing to open retail establishments in places where a satisfactory distribution can be obtained through existing dealers. Where this policy is not adhered to it is difficult to gain the good will of the independent retailer and the manufacturer may be confronted with the necessity of giving up his own stores or else doing his own retailing exclusively.

It cannot be said that distribution through the manufacturer's own stores is capable of wide adoption. There are well defined limitations to distribution through this channel and the advantages must be very real to offset the disadvantages which are inherent and potential. Not only is the amount of capital required for such a method large but it may become so great that the manufacturer must depend in part or in whole upon independent dealers. If this time should come they may remember him as a former competitor, to whom no courtesy is due. Manufacturers' stores may be expected to function well for a limited number of fairly specialized products and in a limited way for certain staples. If the independent retailer will go to the trouble of analyzing the manufacturer's problems of distribution he can provide outlets for most goods which are more economical and fully as efficient as those which the manufacturer can provide only at great cost and risk to his manufacturing enterprise. In practice the merchandising of goods through the manufacturer's own stores has not paid its way and the profits of the factory have been eaten into to make up for the losses of the distributive system. This is justifiable when the increased volume of factory output affords enough higher profit to offset the costs of distribution. Unless it does this manufacturer's stores are a failure.

In general it may be said that distribution direct to the consumer by the three methods considered herein has been undertaken with the hope that the increased profits from a stabilized and dependable output for the factory will take care of distribution costs which are generally higher than those incurred by independent retailers.

RADIO BULLETINS

The Journal of Electricity and Western Industry broadcasts a special industrial and business news report each Monday night at 7:30 o'clock, both from San Francisco and Portland. The San Francisco report is broadcasted from station KLP, operated by the Colin B. Kennedy Company at Los Altos, California. The Portland report is sent out by the Northwestern Radio Manufacturing Company from station 7XF. Both reports are broadcasted on a wave length of 360 meters.

Eliminating the Waste in Industry

Shortcuts in Management and New Power Applications Which Have Been Adopted in Western Industrial Plants for Eliminating Waste, Increasing Production and Cutting the Cost of Manufacturing Processes

Manufacturing Methods and Concrete Structures

A Discussion of the Principles of Waste Saving Which Have Been Applied in the Erection of Don Pedro Dam in California

The Don Pedro Dam of the Modesto and Turlock irrigation districts on the Tuolumne River, is an excellent example of the trend of modern manufacturing methods as applied in the construction of large public works. There are few finer installations of waste saving machinery anywhere than is now in use in the construction of this 280-ft. concrete dam.

The whole basic idea underlying the construction plant was to take advantage of the natural arrangement of the ground, which favored the gravity handling of the main mass of materials, and this utilization of gravity plus an intelligent use of small locomotive cars and cable ways, has resulted in a plant which is very nearly the last word in the conservation of materials and the saving of unnecessary manual effort.

Sand and Gravel Plant

About forty miles from the dam proper the irrigation districts have built a modern sand and gravel washing and screening plant. The raw sand and gravel is taken from the bed of the Tuolumne River by means of drag line excavators, and is loaded into small trains and hauled to the washing plant.

These trains dump one car at a time into an unloading pit and the material is hoisted to the top of the washing plant by means of an endless inclined belt conveyor. On top of the structure is washing and screening machinery, and the materials fall by gravity into the proper bins. The material divides into three classes: sand, gravel, and cobble, up to approximately six inches in diameter. This material is hauled to the site of the dam in fifty-ton, standard bottom dump cars which discharge from the top of an elevated trestle, which is sufficiently long to have a capacity for approximately twenty-five days' material.

The Mixing Plant

Underneath the piles of sand, gravel and cobble, at the base of this long elevated trestle are tunnels in which are operated small trains pulled by gasoline locomotives. The rock, sand and gravel is dumped through specially designed gates into these cars, and the correct proportion of each is included in a train load, so that no further mixture of materials is required before dropping into the concrete mixers. Two of these concrete mixers are installed, and have a

combined capacity of 1,200 yards of concrete in eight hours.

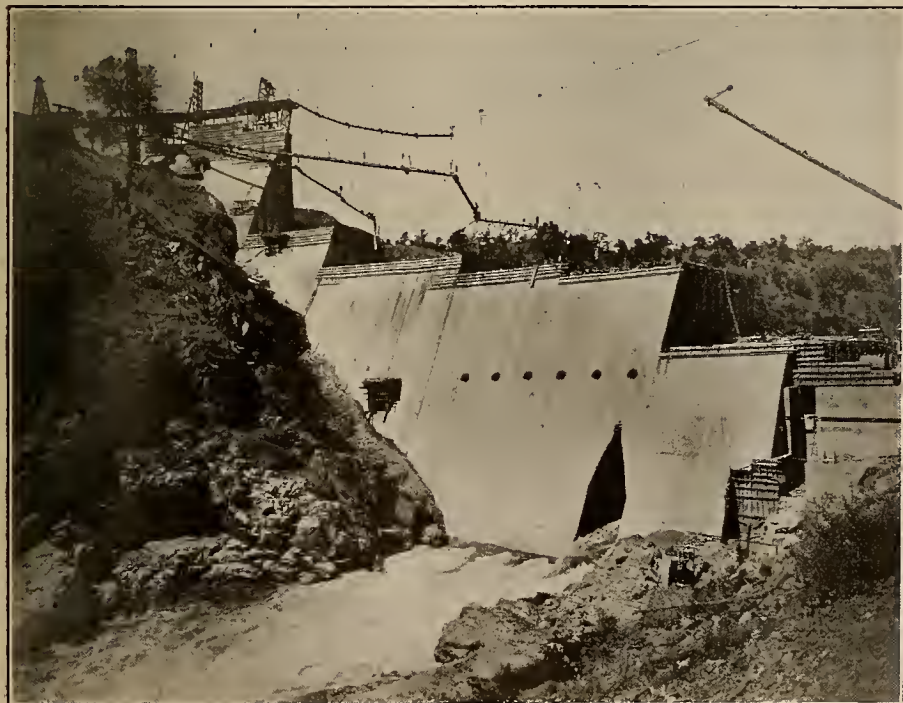
In addition to the sand and gravel, cement is also held in storage, but the greatest amount of cement used is not put in storage at all but is taken directly from the loaded box cars and carried by conveyors direct to the concrete mixers. In this way the very least amount of labor is used in handling and the very smallest possible loss in cement occurs, due to this minimum of handling.

There is installed in this plant adjacent to the concrete mixers a special equipment for recovering the cement, which adheres to the sacks after their contents have been dropped into the mixer. This equipment consists of revolving drums in a dust proof room with appropriate collecting devices, and the results to date have been a recovery of nine-tenths of a pound of cement per bag. With this average holding good for the remainder of the job, the enormous total of approximately 10,000 bags valued at approximately \$10,000 will have been recovered. In addition to the cement recovering equipment there is a sack baling machine installed, which takes care of the necessary counting and handling of the empty sacks which are returned for credit. By means of this efficient bag shaking and bag baling equipment sacks are returned to the cement companies in the very best condition and with the least possible rejects, which means also the saving of a very large sum of money that otherwise might be lost if the old careless methods of shaking and baling were in vogue.

As will be noted from the accompanying photograph, the mixed cement is delivered to the dam by means of gravity troughs which are supported from aerial cables stretched across the top of the dam. The mixed material is taken from the concrete mixers in small trains run by gasoline locomotives, and the cars dump into hoppers at the mouth of these troughs. The lower end of the trough is flexibly handled and the material is delivered like water from the end of a hose.

On account of the size of the dam, a very small amount of wooden form work is necessary and, as will be noted from the photograph, the whole structure is built up in a series of terraces, the top one of which forms the finished level of the main structure.

This dam in the truest sense of the word may be said to be manufactured instead of built, as even the stairway treads and other special features are cast in cement molds in the shops, which are a part of the main plant. In this way every section of work, contributory to the main feature, is prepared in advance and allows the main structures



A view of the Don Pedro Dam being erected on the Tuolumne River in California by the Turlock and Modesto irrigation districts, showing the labor saving methods used in pouring the concrete. This is but one of the waste-saving principles which have been applied in the erection of this huge concrete structure.

to go forward in an orderly and speedy manner.

The practice of cement sack shaking with proper counting and baling as handled in this job, is well worth the attention of every manufacturer, because cement is used in every plant and a preventable waste can be easily and profitably eliminated.

Highly Efficient Cargo Conveyor Developed in Seattle

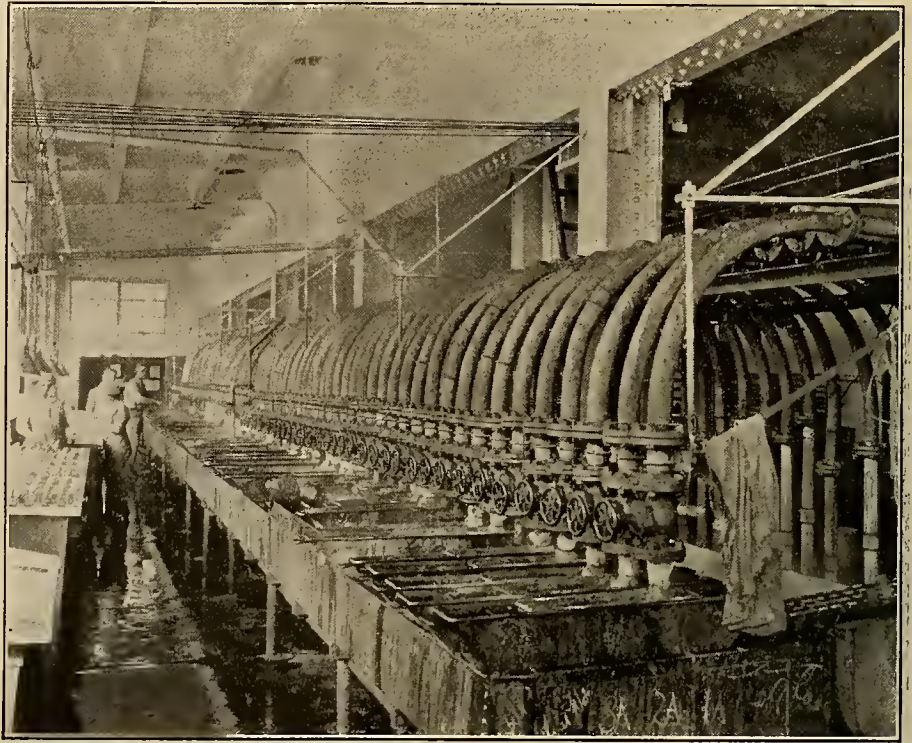
The desire to achieve the greatest degree of efficiency possible in the loading and unloading of the vessels which dock at the water terminals of the ports of the Pacific Coast has resulted in the development and application of material handling machinery to a degree hitherto thought unattainable. The Port of Seattle in connection with its planning and construction program of its marine terminal system, has adopted the policy of providing these harbor facilities with the most modern and up-to-date mechanical handling devices.

Among this mechanical handling machinery will be found several highly specialized labor-saving devices which have been planned, designed and constructed by the engineering department of the Port of Seattle.

The latest equipment to be added at one of the large municipal marine terminals is known as a "Ship Cargo Telescopic Conveyor," which is shown in the accompanying photograph. The view shows the conveyor working under the extreme condition of unloading a light vessel at high tide.

The equipment consists practically of a conveyor within a conveyor, so arranged that the major material handling machinery is lengthened or shortened by extending the interior conveyor. Any alteration to the major equipment is performed by power and not by manual labor, resulting in a considerable saving in both time and money.

The length of the conveyor extended



CHEMICAL TESTING IMPORTANT IN SUGAR REFINING

The above view illustrates the importance placed by manufacturers on the close chemical control of their product. From this station the factory chemists can tell the condition of every filter in the plant. It is termed the "pulse" of a modern sugar refinery.

is 45 ft. and the length collapsed, that is, with the extension raised to the highest point, is 28 ft. The width overall is 5 ft. 6 in. and the depth overall is 4 ft. 6 in. The machine is compact throughout. It can be supported at both ends, or at one end and the center, or at the two ends and the center. The estimated weight is 3½ tons, or such that the entire piece of equipment can easily be handled by the ship's boom. The motor equipment consists of a

10-hp. squirrel cage, 3-phase, 60-cycle, 440-volt a.c. induction motor operating at a speed of 1,200 r.p.m. The motor is equipped with an auto starter. Silent roller chain drives are used both for the conveyor and telescoping equipment.

The equipment has a capacity of 125 tons per hour at a speed of 75 ft. per minute and its use will cut the time required for loading or unloading a vessel by half. With the present method of loading and unloading cased salmon, the capacity of the terminal is 800 to 1,000 cases per hour. With the use of this equipment the capacity will be increased to 2,000 cases per hour. It has been designed to handle boxes, sacks and bales up to a maximum weight of 500 pounds and a maximum size of 2½ ft. by 2½ ft. by 5 ft. The commodities which it has been designed to handle consist of cased salmon and milk, two of the principal exports of the district, cased goods of all kinds, sacked goods of every description, including rice, sugar, grain, beans, etc., and also baled commodities such as cotton, hemp and silk. In the case of bales weighing more than 500 pounds, such as rattan, furniture and the like, ample provision has been made for handling these with the ship's boom, as the conveyor covers but a small portion of the hatch opening.

The conveyor has also been designed for use on transferring cargo from one portion of the transit shed to another and from ship to warehouse through the transit shed. The estimated cost of the device is \$2,400 per conveyor, including the extension and full equipment.

Officials of the Port of Seattle expect that this latest application of material handling machinery to loading and unloading a ship's cargo will revolutionize the handling of ocean freight on the Pacific Coast.

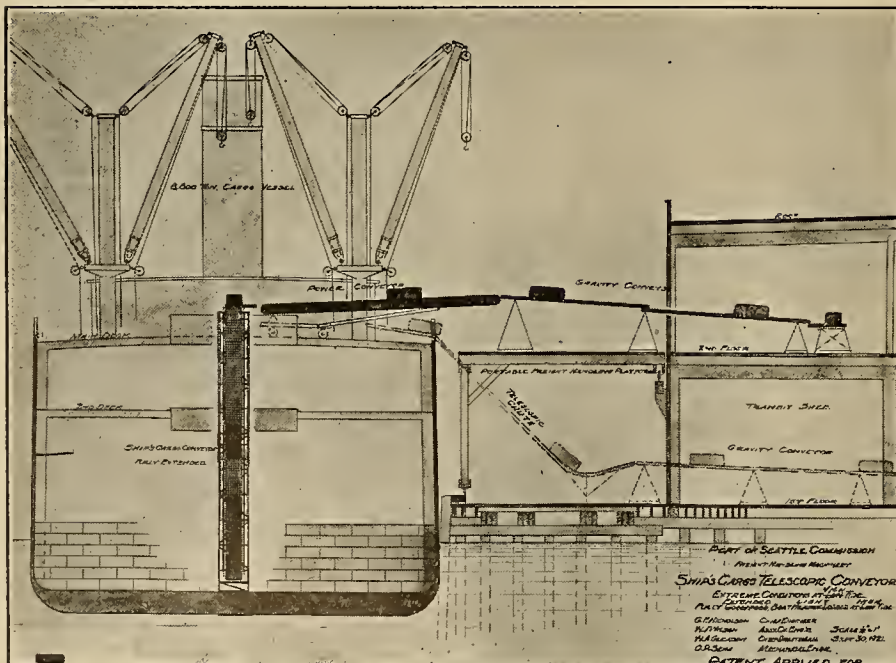


Diagram of a vessel unloading at the water terminal of the Port of Seattle, showing the newly designed telescopic conveyor operating in the hold of the vessel, together with the other highly specialized material handling devices used for expediting the handling of cargo either from vessel to wharf or vice versa. The diagram shows the device operating under the extreme condition of light cargo at high tide.

Western Dealer, Jobber and Agent

Business building suggestions for the store—Distribution and warehousing methods—Advertising and sales promotion ideas

There is Business in Show Window Illumination

A \$300 Installation in a Los Angeles Store Results From a Simple Demonstration Based on the Foot-Candle Meter

Armed with a foot-candle meter, and a few figures, the contractor-dealer who is in search of new business has two weapons which are as powerful as poison gas and a battery of 75's when opposition looms up in the way of a sale. Every merchant in his city whose display windows are lighted at night becomes a prospective victim for his attack and every merchant is open for a sale under such circumstances. Heed what happened in Los Angeles under similar circumstances and become convinced.

The Wetherby-Kayser Shoe Company deals in exclusive foot wear. They appreciate the value of good show windows second to none among their competitors. They always had good windows, and thought them well lighted. The windows were well lighted. But the company did not know that four times as much light on the displayed merchandise could be effected with one-third the cost for electricity. Nor did they believe it until the lighting specialist from a local contractor-dealer establishment came along with a foot-

candle meter, a few reflectors and a few of the proper type bulbs.

A demonstration window was set up by the lighting specialist to prove to the members of the company that they were not only wasting money but were also failing to display their merchandise to the best advantage. Some surprising figures resulted. For instance it was found that the demonstration window, which was the brightest, consumed but 1,260 watts while the old window consumed 3,525 watts without near the effect. Further, by actual check, it was found that in one hour, 182 people paused to look at the window which was equipped with the proper reflectors and only 91 stopped to look at the other. And lastly, the foot-candle meter showed that light was falling on the merchandise in the two windows at a ratio of 22 to 5, with the poor window consuming the most current.

The demonstration required but little time and effort on the part of the lighting expert employed by the contractor-dealer, yet it resulted in an immediate

sale of \$300 worth of fixtures for the two windows.

Electric Bungalow Erected at California Beach Resort

The summer vacation visitor who has plenty of time on his hands is induced to spend some of it in the study of the



This tiny electrical home has been erected on the board walk at Santa Cruz, California, popular beach resort. It tells the complete electric story to the thousands of vacationists who visit the resort. Walter Cox, whose company installed the electrical equipment, is shown demonstrating a vacuum cleaner on the porch.

method electrical in a neat little bungalow which has been erected on the board walk at Santa Cruz, California, one of the popular Northern California beach resorts.

Wood Bros., builders of portable houses, are responsible for the bungalow itself, which serves as an advertisement of the summer homes they are prepared to erect. The electrical installation has been supplied by the Walter Cox Electric Company of San Jose. A local furniture store has supplied complete home furnishing equipment.

The miniature electrical home is complete in every detail, insofar as the small space to be furnished will allow. There is a small range, various kitchen appliances, a vacuum cleaner, and a complete array of dining room table devices such as a percolator, waffle iron, grill and the like. Power to operate the appliances is furnished free by the Coast Counties Gas and Electric company.

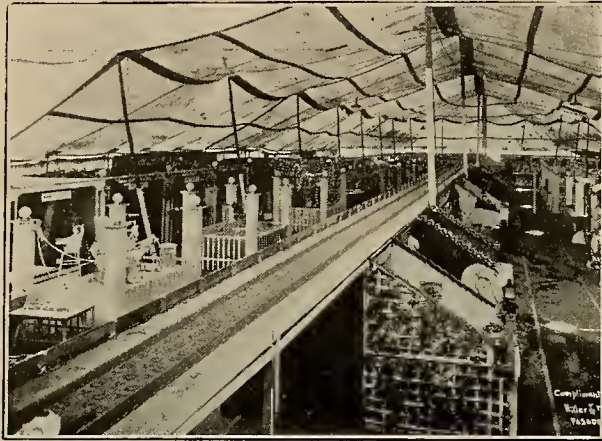
The tiny electrical home was opened to the public on July 1, 1922, and on the holiday over the Fourth, more than 5,000 people examined the equipment of the cottage. As this is one of the most popular beach resorts in northern California, it is expected that between 30,000 and 40,000 visitors will have been instructed in electrical home conveniences before the present vacation period is over.



A \$300 installation of fixtures resulted from the test demonstration pictured above. One window is using 3,525 watts while the other, equipped with proper fixtures, is using but 1,260 watts. The ratio of illumination on the merchandise in the two is 22 to 5. The window using the least current is the brighter. The display was arranged by the illumination department of the F. E. Newbery Electric Corporation of Los Angeles.

Industrial Fairs Furnish Good Merchandising Prospects

Actual Check on Expense of Exhibits and Profits Made as Direct Result of Such Activity on the Part of Southern California Contractor-Dealers Proves Conclusively the Value of Participating in Fairs



A typical industrial fair in a city of 50,000 which was visited by 20,000 people during the week it was open. Contractor-dealers who took part secured large numbers of prospects for appliances.



This booth, prepared by the H. L. Miller Company, Pasadena, won the first prize at an industrial exposition. Its real value was in the amount of new business it secured for the company.



The Jewel Electric Company of Glendale, is another enterprising company which realizes the value of constantly emphasizing the electrical story to the public. Increased sales are the result.



The electrical industry comes forward one hundred per cent when called upon to participate in county fairs. This is the display arranged by the Harrison-Fitch Electric Company, Pomona.



Southern California electragnists are firm in their belief that there is no better place for securing prospects than the industrial fair. J. A. Newton Electric Co. prepared this booth.



A tiny two-room electric home constituted the display of the Glen-dale Electric Company at a recent trade show. It was one of the most popular booths in the fair for it carried a real message.

Telling the Electric Home Story in a New Way

What the Denver Electrical Cooperative League Has Done to Capitalize on the Number of Small Homes Being Erected

By S. W. BISHOP

Executive Manager, Denver Electrical Cooperative League

One of the most notable developments in the building boom now evidencing itself throughout the country is the construction of small dwellings. Economic experts say that this is a logical result of the serious housing conditions experienced after the war because, since the armistice, it has been the family with small means that has suffered the most.

Now, however, "the old order changeth" and with a decrease in building costs Mr. Average Wage Earner is seeking relief from high rent and cramped quarters by building himself a home. It may be a garage, bungalow, or a commodious two-story dwelling. The main feature is that it can be called home—one in which the interior decorations will be something more than rent receipts.

Judicious economy is generally exercised in laying out money for buildings of this type. On the other hand, the builder has some thrift in his make-up and is consequently on the alert for effecting a saving in the original cost, maintenance or operation of the house in question.

Here is where Mr. Electragist enters.

In the first place, the builder must be warned about false economy in so far as the electrical installation is concerned. Just because a house is small is no reason why wall switches or convenience outlets should be eliminated. There would be no justification for installing a plumbing system only 50 per cent efficient. Similarly this logic applies to the electric wiring, but the builder unfortunately must be convinced oftentimes that a wall switch is an absolute necessity and a convenience outlet is not a luxury.

Unfortunately the plans for these small structures are generally the product of an unexperienced imagination—that of the builder, his contractor or anybody but an expert. A job of this kind should be one for the man who knows but it is seldom the case. Sometimes he does know but on account of a certain aggressiveness it is made a "dollars and cents" proposition where there will be a maximum return in profits and a minimum return in satisfaction.

Expert advice is usually the one thing which is most lacking on a job of this character. It necessarily behooves then the electrical contractor to impart some of his knowledge providing no other means are available to combat the ignorance. He must not be like the "curber" who is always on the qui vive for outlets which can be eliminated.

Unfortunately many prospective purchasers, and in this case builders, immediately assume a defensive attitude when the vender attempts to advise them intelligently as to their possible needs. Some people apparently resent this kind of interest so they are eliminated from the present consideration. Of chief concern should be those people who can be won over by intelligent methods such as personal advice, educa-

tional literature, authoritative information, and best of all, by means of ocular demonstration where the person can be shown by visual methods the requirements, present and future, in his own case.

Certainly no better means than an electrical home exhibition can be secured for "telling the story" but there are few communities in which these displays have been made, and even in those places where cooperative or similar movements do exist, it is not possible to have a continuous exhibition of this nature.

How then can the idea be best put over?

One solution has been developed in Denver that has materially aided in improving the electrification of small homes. It has been possible through the work which the Electrical Cooperative League in that city has done with an organization of architects, built along similar lines and known as a small house service bureau. In so far as the organization is concerned, the idea is not new because the same scheme has been developed in other communities by divisions of the American Institute of Architects.

What is new, however, is the development of closer relations between the electrical industry and this architectural group. The Denver organization is backed by about twelve of the leading architects and their primary purpose is to provide a more intelligent architectural service for the builder of small means at a nominal cost.

The situation may be better understood if the scheme and procedure of the architects' bureau is grasped correctly. Because, as is generally known, the builder of the small house does not secure the services of an architect, it means that class of house is suffering in design, appointments, refinements and character because of the lack of this service. The chief reason for dispensing with the service, it is generally agreed, is the cost of plans, supervision, etc. To obviate this condition, the bureau conducted a prize contest amongst its members for the best designs in small homes ranging from four to eight rooms, most of which are of the bungalow type.

Fifty-two designs were finally accepted for development. These were worked up the same as if they had been for individual clients. Sketches and floor plans were then issued in a comprehensive and attractive book which was sold. Persons interested could then make their choice and could order a complete set of working plans in blue print, which included all finish details, the bills of material required, specifications, and a set of legal forms required to make the building transaction complete. The cost of this service varies from twenty to forty dollars and represents less than one-tenth of the charge normally made by architects for their complete service in building a small home of the same type.

The electrical industry made its debut in the arrangements by giving its approval and support to the movement, providing that certain electrical standards were established—one of which was that each room must have at least one convenience outlet, and all finished rooms, hallways, porches, etc., should have a flush type wall switch to control the lights. This was established as an "irreducible minimum" as provisions were made that the larger houses should have even more complete installations as a minimum.

The first plans completed—but before they were printed—were turned over to the Electrical League for corrections, suggestions or revamping and at that time it was noticed that the draftsmen working on the plans economized in the wiring designs—with a result that education had to be meted out to them, in accordance with the minimum standards established. However, the general development was such that but few suggestions were needed.

As a result of this arrangement, the result in brief has been that of doubling the wiring installation as ordinarily installed in similar houses.

Through the book, of which nearly two thousand have already been sold, two additional ideas of benefit to the electrical industry were developed. The first was the inclusion of a chapter prepared by the Electrical League on "Electricity in the Home," which explained the function of electricity in the home and stressed the subjects of illumination and convenience outlets. The second feature was the establishment in the display advertising pages of the book, an electrical section wherein the advertisers were tied-in to the "better service" idea.

The Electrical Cooperative League in its space gave reference to the electrical home and the gratuitous service it renders in advising on electrical problems. As a result, a number of the plans procured by prospective builders have already been turned over to the League for further development and the wiring plans were made even more comprehensive—in one case approximating in proportion the complete installation made in the first electrical home recently exhibited in Denver.

The Society for Electrical Development, Inc., is issuing a sales letter service to its members. The following letter shows the effectiveness of the material which the organization is sending out:

Dear Mrs. (name):

You need not confine your summer vacation to two weeks only—if you would call upon household electrical appliances to provide you with all-year-round ease.

It costs anywhere from \$150 to \$250 for an ordinary two weeks' family vacation at a summer hotel, or a month's stay at a cottage "by the sea."

The same money expended for electric time-saving appliances in the home, either as an initial investment or adding to the appliances you already have, will extend the summer vacation over the whole year.

An electric clothes or dish washer, for instance, will certainly add to your time off duty each day and continuously provide more time for much needed rest.

Let us help you plan a permanent vacation with electrical appliances. Partial payment plan if you desire.

The enclosed folder will assist you in learning how electrical appliances could be advantageously used to make your summer vacation the start of the permanent one.

Cooperatively yours,

(Name and address).

Activities of the West

A Business Man's Department Devoted to Events and Developments in Western Industrial Centers—Including News of Interest to Readers in Public Utility, Industrial and Trade Fields

Forest Fires Under Control

Northwest Needs Rain to Check Menace
Dry Year Blamed for Losses

Favored by cool weather and continued westerly winds, the forest fire fighters in the forests of western Washington during the middle of July were holding the fire menace in check, but until rain falls the fire danger which has harassed this section for the past eight weeks, will not be removed.

According to G. C. Joy, supervisor for the Washington Forest Fire Association, on July 15 the worst forest fires at that time were in western Lewis county, and conditions in Snohomish, Skagit, Pierce and King counties were much improved. On that date, it was stated that one-half inch of rain would be worth millions of dollars to the Northwest, as that amount of rain would stop all fires and prevent further fire menace for 60 days. George N. Salisbury, weather bureau observer at Seattle, is authority for the statement that this is the driest year since 1910 in Washington. The Puget Sound section has had practically no rain since May 26. Throughout June, there was only three-hundredths of an inch, scarcely enough to lay the dust.

General Electric Co. Establishes Merchandising Department

The General Electric Company has announced the formation of a Merchandise Department, which will have charge of products that are handled through re-sale channels.

The organization will consist of three divisions: administrative, supply sales and motor sales, and will be headed by George P. Baldwin as general merchandise manager, and H. C. Houck as assistant general merchandise manager.

The administrative department will be divided into sales promotion, research, advertising, publication and supply house sections.

The supply sales division will be in charge of a sales manager and an assistant sales manager, with section managers covering fans, wiring devices, conduit products, rectifiers, wire, transformer products, and miscellaneous supply products.

The motor sales division will cover the small motor field.

There will also be a district merchandising organization in each district office of the company.

The merchandise department will take over the work pertaining to the lines of re-sale products formerly handled by other departments, the latter continuing to have charge of those products that are not sold through distributors or dealers.

The new organization will begin to

Colorado River Hearing Is Postponed to Aug. 28

The hearing at Santa Fe, New Mexico, before the Colorado River Commission which was to be held August 1, has been postponed to August 28. The postponement was made necessary because the presence of Secretary of Commerce Hoover was required in Washington in connection with the strike situation.

function about August 1, and it will largely be centralized at the Bridgeport Works of the company, although Mr. Baldwin will have his office in New York. Announcement of the complete personnel of the department will be made soon.

Seattle Company Takes Over Two Northwest Power Companies

Two electric light and power properties and two water systems, the former located at Montesano and Elma and the latter at South Bend and Tenino, Washington, formerly operated by the Northwest Electric Light and Power Company, have been taken over by the Washington Coast Utilities Corporation of Seattle, through receivership proceedings, and will hereafter be operated by the Seattle corporation as subsidiary companies.

The Washington Coast Utilities Company, of Seattle, operates light and power and water systems in several small towns in the Puget Sound country and also in the Wenatchee district in central Washington. The largest holdings of the Utilities company are located in Port Townsend, Marysville, Arlington and Wenatchee.

In announcing the acquirement of the properties at Montesano, Elma, South Bend and Tenino, an official of the company stated that work will be started immediately in making physical connections between the Montesano and Elma plants and the steam-electric plants of the Grays Harbor Railway and Light Company at Aberdeen. This work will involve the construction of 12 miles of high power transmission lines between the Grays Harbor metropolis and the two towns named, and also the reconstruction and re-arrangement of distribution lines in the towns of Elma and Montesano. Six miles of the transmission lines will be built by the Grays Harbor Railway and Light Company and the remainder by the Washington Coast Utilities Company. The Washington Coast company will also build a substation at Montesano.

Refinancing Plan Announced

Southern California Edison Co. Will Re-classify Portion of Stock

The Southern California Edison Company has been given permission by the California Railroad Commission to re-classify its stock and to issue and sell \$9,500,000 of 7 per cent cumulative non-participating preferred stock to retire outstanding second preferred stock and for development work. According to the plans of the company, outstanding first preferred stock amounting to \$4,000,000 will be designated as original preferred. Second preferred amounting to \$12,020,900 is to be retired and the common stock is to be reduced from \$83,500,000 to \$60,000,000. A meeting of the stockholders called for August 1 is expected to ratify these changes. The company's authorized capitalization of \$100,000,000 will then consist of \$4,000,000 of original preferred, \$36,000,000 of 7 per cent cumulative non-participating preferred and \$60,000,000 of common stock.

The \$12,020,900 of the second preferred stock is owned by H. E. Huntington who has agreed to sell the stock to the company for \$9,453,322, or at a price of approximately \$78 a share. Mr. Huntington, according to the showing made at the hearing, has agreed to take \$4,000,000 of the new preferred stock and will receive the balance of approximately five and one-half million dollars in cash. This amount the company plans to obtain from the proceeds of the sale of common stock on hand and being received in installments and also from the sale of some \$2,000,000 of the new 7 per cent preferred.

The company's estimates of its construction expenditures for the seven-year period beginning with the present year were given to the Commission in the following tabulation:

1922	\$27,344,300
1923	18,055,800
1924	13,829,000
1925	22,290,000
1926	16,200,000
1927	15,975,000
1928	11,800,000

A. E. Carlton, Colorado capitalist who, with his associates, are the principal owners of the Grand Junction Electric, Gas and Manufacturing Company, and the Grand River Valley Railroad Company, has purchased the Palisade Light and Power Company from Hendrie and Bolthoff of Denver. It is announced that there will be no change in the management or equipment of the Palisade plant at this time. The deal is understood to involve a heavy investment, as the Palisade plant is comparatively new and up to date.

Events in Washington of Interest to Western Men

A Survey of Recent Developments in the Nation's Capital by
Paul Wooton, Special Correspondent of the Journal
of Electricity and Western Industry

All other events in Washington during the past two weeks have been overshadowed by the coal and railroad strike developments. The President asked representatives of the coal operators and of the coal miners to sit around the table in an effort to arrive at an agreement which would permit of the resumption of coal production. No agreement was reached and it was apparent from the beginning of the conference that it could result in nothing but a deadlock. Then the President proposed the setting up of an arbitration commission. The plan was rejected by the miners, but was accepted, with reservations, by the anthracite operators, and unconditionally by all of the operators' associations except three.

The failure to secure unanimous acceptance of his arbitration proposal led the President to urge the operators to return to their mines and attempt to produce coal. It also was made clear at the White House that this invitation to resume coal production was extended to the mine workers as well. The President then telegraphed the governors of the twenty-eight coal producing states urging that they afford every protection to those attempting to produce coal. As this is written, the mine operators have selected certain propitiously situated properties and are preparing to undertake their operation. If it should prove that they can not produce coal, the administration is understood to be prepared to take another step, the nature of which has not been announced.

It is regarded as having been very unfortunate that the Railway Labor Board should have handed down its shopcraft decision just as the coal strike was reaching its crisis. This fact has complicated greatly the task now before the administration, of protecting the public against a fuel shortage. There is evidence of collusion between the two bodies of strikers, since the efforts of the shopcraft strikers apparently are being concentrated on important junction points through which coal must move from the non-union fields.

Dye Embargo

The report of the sub-committee, of which Senator Shortridge of California was chairman, which investigated the charges brought against the domestic dye industry, will have an important bearing on the final vote on the dye embargo. The Senate, on July 15, declined by a vote of 32 to 38 to accept the proposal of the Finance Committee to extend the embargo for one year and to empower the President to extend it for one year more, if he should deem it advisable. This vote was taken in Committee of the Whole. Senator Frelinghuysen, of New Jersey, who led the fight for the dye industry, reserved a separate vote on the matter when the bill is considered by the Senate proper.

Senator Shortridge, since the vote was taken, has indicated that his committee will report that there are no evidences of there being a monopoly among domestic dye manufacturers and

that his exhaustive investigation of the whole situation failed to discover any irregularities in the conduct of this industry. This is expected to have an important influence when the roll is called again on the dye embargo.

Chemical Foundation

It is admitted generally that the vote on the dye embargo was influenced by the action taken by the administration against the Chemical Foundation. Since the first charges were made it has become increasingly apparent that there are two sides to that case and that it is not related to the embargo proposal. It is generally conceded that the amounts paid for the German patents were relatively low as compared with the real value of these rights. On the other hand, no evidence has been produced to indicate that any other than the American people as a whole have received benefits from the transaction. While the chemical industry is vitally concerned in each of these cases, sight is not being lost of the fact that one is for judicial determination, likely to be a process of years; whereas the other is legislative, the effects of which will be felt immediately.

Potash Bounty

Recommendation by the Finance Committee of the Senate to substitute a bounty for the duty proposed for potash has led to wide discussion of the application of the bounty policy for the encouragement of domestic production of commodities, of which the country's supply is limited. The application of this policy to such materials as manganese and tungsten also is being discussed.

Depreciation Legislation

In a letter to the Secretary of War, L. W. Wallace, the executive secretary of the Federated American Engineering Societies, asks what has happened to the appeal of the electrical industries against the depreciation regulation drafted for use in connection with the Water Power Act. Mr. Wallace's letter reads as follows:

"For many months, there has been pending before your Commission an appeal from the electrical industries against the depreciation regulation which it was proposed to enforce in the administration of the Water Power Act.

"Many of the engineers who compose this organization are particularly anxious to see our water power resources utilized as extensively and as promptly as is possible, and some of them have requested that I secure an authoritative statement as to the status of the matter. There is a feeling that the uncertainty in regard to depreciation is tending to retard this development.

"May I inquire what are the prospects for action on the depreciation regulation? It should be very helpful to our members if we could have the advantage of any personal views on the subject which you may care to express."

War Minerals Relief

A far-reaching opinion has been handed down by the Secretary of the Interior in the claim of the Santa Margarita Chrome Co. He holds that claimants should be reimbursed for

losses on one operation, even if the same person made profits on a similar, but separate, operation. All action taken heretofore by the War Minerals Relief Commission has been placed on a policy of net losses only. If a claimant lost in one chrome operation, for instance, but profited in another, he was awarded only his net loss. This ruling is expected to result in additional awards in a large number of cases. In view of the ruling, an award of \$18,720.27 was recommended. Among the other recent awards is one of \$10,777.69 for John J. Everharty, of Los Angeles.

Silver Export Association

Preliminary steps are being taken looking to the organization of a silver export association. Before the Pittman Act expires it is hoped to have such an association ready to function so as to permit the orderly marketing of the country's silver production. Under the Pittman Act, the 209,000,000 fine ounces of silver sold by the government during the war to Great Britain is to be replaced at \$1 an ounce, the price which Great Britain paid for the Treasury's reserve of silver dollars. If American production of silver is dumped on the market immediately after the government reserve is replaced, a demoralization of the price is feared. If the export association can be formed, it will make it possible, it is believed, to cope more successfully with the situation.

New Milling & Elevator Company at Casper, Wyoming

Plans have been completed for the establishment of a milling and elevator company at Casper, Wyoming, with a daily output of 100 barrels. The company is to be capitalized for \$100,000 and will be in operation by August 1. Working capital for the erection of the plant has already been provided.

Hard wheat raised on dry farms in the vicinity of Casper are expected to keep the mill well supplied. The company plans to establish elevators along the lines of two railroads centering here which traverse rich farming territory. An alfalfa mill for making feed for livestock and other by-products is expected to be one of the developments of the company in the near future.

Work Scheduled to be Resumed on Boise-Payette Irrigation

There are very favorable prospects that work will be resumed this summer on the Hillcrest extension to the Boise-Payette project, according to a telegram from Congressman Addison T. Smith in reply to requests that the Idaho delegation do all in its power to obtain funds for the work.

This project covers about 15,000 acres of land, situated on the bench south of Boise, and almost touching the city limits. The lands are said to be the most fertile of any in the Snake river bottom.

Water is to be pumped to an elevation of 80 feet above the present main south side canal. The power for pumping the water is to be obtained from the government power plant now constructed at diversion dam, and the lands served by the canal extend up to the point of diversion. Losses, therefore, due to evaporation and seepage will be small.

Plans Maturing for Rocky Mountain Exposition

All Four Branches of Electrical Industry Planning to Make Show Epochal in History of Western Development

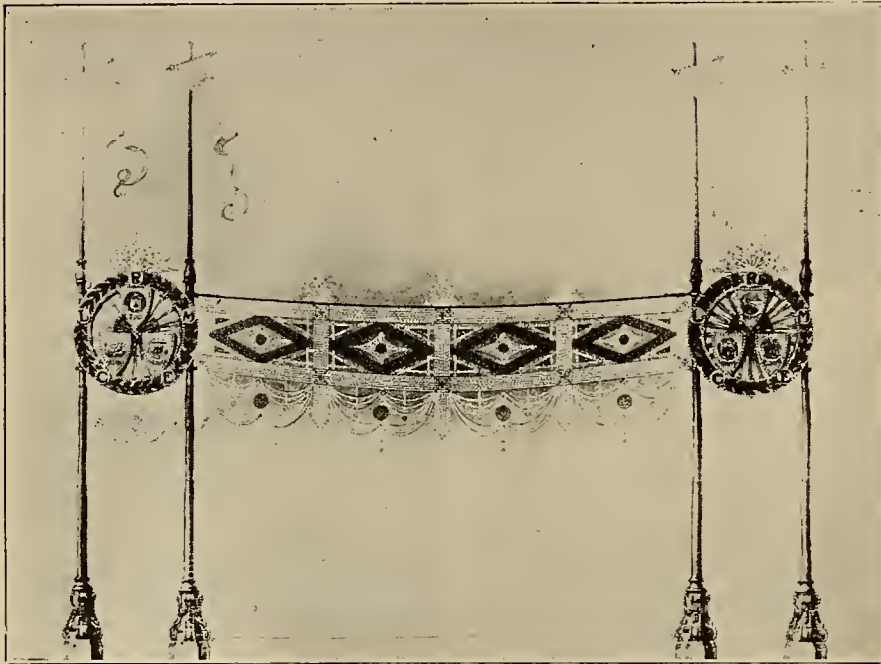
The Rocky Mountain Electrical Exposition, scheduled for October 2 to 14 at Salt Lake City, Utah, will be an epochal step in the development of western industry. It is to be vastly more than a mere temporary stimulus of business; its larger purpose is to permanently widen the scope of the electrical market by bringing into logical contact and working relation the manufacturer, the central station, the jobber and the contractor-dealer. And back of that will be the infinite expansion of service to the populace of the intermountain region.

The exposition will be, first and last, educational. Display of actual electrical products and graphic demonstration of their uses will be the method of this

opening of the exposition. Plans submitted by the famous illuminating engineer foreshadow a spectacle of surpassing novelty and grandeur.

At the end of the arch will be a circular emblem, 12 feet in diameter, bearing the coat of arms of the six states of the Rocky Mountain group—Utah, Nevada, Colorado, Montana, Idaho and Wyoming.

A score of 18-inch searchlights playing in multiple colors on this studded arch will produce a spectacle of brilliance that will eclipse any electrical display ever seen in the Rocky Mountain region. Mr. Ryan estimates that the flaming shafts of light will be visible anywhere within a radius of 50 miles. The arch and its appurtenances



The suggested design for an archway of jewels for the Rocky Mountain Electrical Exposition which is to be held in Salt Lake City, October 2 to 14. D'Arcy Ryan, director of the illuminating engineering laboratory of the General Electric Company, is in charge of the lighting effects. The exposition is being sponsored by the Rocky Mountain Electrical Cooperative League.

great popular institute. The throngs of visitors will have unfolded to them in vivid exhibition the undreamed-of utility and blessing of electric light, heat and power. That this is preeminently an electrical era will be graphically driven home to tens of thousands.

The attendance at the exposition promises to be more than satisfactory. Coming at the time of the Utah State Fair and the Mormon Semi-Annual Conference, it will have the patronage of substantial folk who hail from every quarter of the Mountain country. A total attendance of 200,000 people is not an unconservative estimate. The exposition will add to these two drawing cards, powerful attractions of its own. An advertising campaign calculated to bring unprecedented throngs of visitors to Salt Lake City is being sponsored by the Rocky Mountain Electrical Cooperative League.

The great Regional Arch and electrical display, designed by W. D'A. Ryan, will be fully completed by the

will have a total valuation of upwards of \$100,000.

Salt Lake City was chosen as the place for the exposition because of its strategic location in the Intermountain territory. Besides being at the heart of a vast and rich jobbing area, it is at the center of a region of potential hydro-electric development that exceeds any of similar size in all the world.

The prospect for development is almost limitless. Engineers have estimated that 40,000,000 horsepower is the ultimate goal, with 2,000,000 horsepower already available for use.

The West, even at the present time, uses more electricity, gets it cheaper and has a greater available supply than any other section of the country. Fifty-four kilowatt-hours is the average annual per capita consumption, while eight kilowatt-hours represents the national average. Hence, it seems altogether timely and fitting to promote an electrical exposition on the large scale in this great industrial region.

The exposition will be held in Bonneville Park Pavilion, a spacious auditorium that is easily accessible to visitors in Salt Lake City. The floor plan has been worked out in harmony with principles of effective and correct display. Every exhibit will be accessible to a high degree, having frontage on one of the aisles. One section of the auditorium has been reserved for the display of feature exhibits.

The exhibits will be arranged in the following classifications: radio, lighting, heating, signaling, railway, farm lighting, automotive, industrial, utility, baking and cooking, wiring supplies, fixtures, therapeutics, telephone, telegraph, novelties and toys, educational and spectacular effects.

The response of the electrical manufacturing industry has been gratifying to the officials of the League. The success of the exposition is already assured so far as exhibits are concerned. Reservations are being taken at a rate that indicates universal interest in the show.

New Power Company Authorized to Operate in Idaho

An order has been issued by the public utilities commission of Idaho giving the Murtaugh Light and Power Company permission to serve with electrical energy certain territory in Twin Falls and Cassia counties. The order gives the company permission to construct such transmission lines and distribution lines as may be needed. No permission is given, however, to construct a power plant, as the company contemplates purchasing electricity from the Idaho Power Company.

The commission's order defines exactly what territory may be served by the company, and no service may be sold outside the boundary lines defined by the commission. This was done because the territory to be served by the company is distinctly Idaho Power Company territory, but that company has waived its right to serve the district, and the commission gave the Murtaugh company permission to serve residents of the territory involved.

Pacific Gas & Electric Co. Will Improve Sacramento Property

Extensive improvements to the Sacramento gas plant, involving an expenditure of over \$100,000, are now underway by the Pacific Gas and Electric Company and will be rushed to completion.

The gas generating equipment is to be rebuilt and improved and will result in increasing the output capacity from 100,000 to 125,000 cubic feet per hour. Two new and modern Sterling boilers of 250 horsepower capacity each are to be installed and also a steam driven gas compressor capable of delivering 130,000 cubic feet per hour to the high pressure mains.

Company engineers announce that it is believed that the new installation will provide for all requirements for many years. The improvements are made necessary because of the recent installation of a high pressure pipe line supplying Davis and Woodland from the Sacramento plant and partly because of the rapid growth of the city of Sacramento within the last few years.

California Railroad Commission Makes Important Ruling

Establishing the principle that a certificate of public convenience and necessity granted a utility may be modified to meet changed conditions, the California Railroad Commission has ordered a division of territory between the Vallejo Electric Light and Power Company and the Great Western Power Company of California in Vallejo and vicinity. The matter came before the commission upon the complaint of the Vallejo company charging the Great Western with invasion of its territory.

Both utilities have been granted certificates authorizing them to serve electricity in the same territory. The question involved, the commission stated, was whether the commission has power to prohibit wasteful and unnecessary competition or duplication of lines within such district by limiting the rights of the company under their certificates. Admitting that the limitation of the rights of either party to make extensions will result in a virtual revocation of the certificates as to part of the territory covered by them, the commission held that under the California Public Utilities Act it has power to modify a previous order or decision at any time.

Regarding this power the commission in the decision written by Commissioner H. Stanley Benedict said:

Furthermore, a certificate of public convenience and necessity is not a right which passes beyond all regulation or control. While the Commission could not arbitrarily revoke a certificate, especially if extensive investments had been made pursuant to it, we are of the opinion that the Commission may make reasonable regulations governing, and if necessary in the public interest, limiting its use."

Under the terms of the order the Great Western company is directed to make no further extensions of its lines and to construct no more distribution lines in the general territory now covered by the lines of the Vallejo company. The Great Western company is permitted to continue to serve Highway Home Additions and such other consumers as it now has or can serve from its existing distribution lines. The Great Western is further permitted to serve any applicant to whom service has been refused or shall hereafter be refused by the Vallejo company. The certificates, previously granted to these utilities, were modified in accordance with the findings of the present decision. Discussing the general question of competition the commission said:

The question whether competition or duplication of lines in a given territory should be forbidden by the Commission is one of public policy to be determined from the particular facts in each case. Competition under some conditions is not, of itself, harmful and has in some cases been permitted by the Commission. In the present case, however, we can see no good purpose to be served by permitting the two companies to extend their lines indiscriminately in the area in question. That area is contiguous to the city of Vallejo. Much of it is built up now. The natural growth will be, as it has been, outward from the city. Whether the actual boundary line of the city is extended or not, it is not unlikely that much, if not all, of the territory in question, will be actually city territory. We think that duplication of lines in territory of this character and under conditions here existing should not be permitted.



Architect's conception of the new factory which is being constructed in Los Angeles for the U. S. Electrical Manufacturing Company, manufacturers of U. S. motors.

U.S. Motors Will Have New Home in Los Angeles

Breaking ground on May 20 for what is declared will be the largest electrical factory west of the Mississippi River, the Austin Company is rushing the erection of a new factory for the U. S. Electrical Manufacturing Company on Slauson Avenue, Los Angeles. The factory is situated on a tract of land five and one-quarter acres in size and will be one of the most modern industrial units in southern California. The builders are under contract to complete the factory by early fall and the well-known electrical concern is making preparations to equip its new plant with every approved facility. It is stated that the plant and equipment will represent an investment of approximately \$500,000.

The building for the first unit will occupy two acres of space and will be one of the largest daylight factories in the West. The entire sides will be of glass and the building will be constructed of steel and ornamental brick.

The first unit, which will have a frontage of 150 feet, will be two stories in height and will give a space of 4,000 sq. ft. for administration, engineering and drafting accommodations. In the factory building proper, special runways for electrical cranes and monorails are to be installed and the production machinery will comprise 75 individual motor driven machine tools, not only including the equipment at the company's present plant at Third and Central Avenues but many other machines that are being built for special purposes.

There will be special departments for finishing the motor frames, heat treating the materials and painting and for the accommodation of electrical testing equipment. An entire acre of space has been set aside for recreational uses of employees and there will be rest cottages, an athletic field and garages for employees' automobiles.

A distinctive feature will be the system of lighting. A system of illumination is to be installed which will give the factory daytime lighting at night, making the main building one of the most conspicuous edifices in the southern part of the city.

Ample ground has been purchased to provide expansion for several years to come and the new plant is designed to immediately double the company's present production of electric motors.

The co-managers of the company, who are also the owners, H. G. Steele of Pasadena and Carl E. Johnson of Los Angeles, have been responsible for the development of the company and have already brought its annual turnover to approximately the million-dollar mark in the present plant.

General Electric Company Will Build Plant in Oakland

Dr. Thomas Addison, Pacific Coast manager for the General Electric Company, announces the immediate erection of a second plant at Oakland, part of which will be devoted to increased facilities for the manufacture of switchboards and the remainder occupied by motor and instrument laboratories, service shops and offices.

The erection of special plants to serve the Pacific Coast territory is not a new departure for the General Electric Company. They have operated an incandescent lamp factory in Oakland since 1910, employing about 650 people and producing 12,000,000 lamps yearly for the Edison and National Lamp division's Pacific Coast trade.

The tract upon which the new plant will be erected comprises twenty-four acres in the vicinity of East Fourteenth and Fifty-fourth streets, Oakland. The building is to be of steel, brick and concrete, and will embody all of the best features of modern factory construction. It will be a model of illuminating engineering and will be completely wired and equipped throughout with the latest developments in electrical machinery.

This project represents an investment of \$200,000 and is the result of the initiative of Dr. Addison, district manager for the General Electric Company, and E. O. Shreve, the local manager.

The Pacific Coast offices of the General Electric Company will be maintained in San Francisco, but the present switchboard plant and service shop now located at Seventeenth and Kansas streets will be transferred to the new Oakland location.

A model electrical home, known as Salt Lake City's Electrical Home No. 2, was opened to the public on July 25 for a period of two weeks under the auspices of the Rocky Mountain Electrical Cooperative League. (A complete story, with photographs, covering this, will appear in the August 15 issue of the Journal of Electricity and Western Industry.)

Conditions in Twelfth Federal Reserve District

Current Summary Shows Increasing Business Activity Together With Slightly Advancing Prices for Principal Products

The monthly report on business and agricultural conditions issued by John Perrin, chairman of the board and Federal Reserve Agent of the Federal Reserve Bank of San Francisco, indicates several tendencies of the past month which will have a salutary effect on business in general. The Twelfth Federal Reserve District includes the states of California, Washington, Oregon, Idaho, Utah, Nevada and Arizona. A summary of the report follows:

Indications of increasing business activity in this district, which first appeared during April and May, have multiplied during June. Prices of the principal products of the district have either remained firm or advanced slightly, reflecting similar tendencies in national prices. The United States Bureau of Labor's wholesale price index which increased $3\frac{1}{2}$ per cent during May, advanced 1.35 per cent during June and is now 8.7 per cent above the low point of January, 1922. Charges to individual accounts of depositors in banks of the twenty principal cities were 5.6 per cent greater in amount than in June, 1921. Sales of thirty-two representative department stores for the second consecutive month were greater in dollar value than they were in the same month of 1921, the increase of June, 1922, over June, 1921, being 3 per cent. As average retail prices have changed but little during this period, the physical volume of merchandise now moving at retail is evidently increasing. At wholesale, also, the same condition prevails. Of the ten reporting lines of trade, nine advise that the dollar values of their sales for June, 1922, exceeded those of June, 1921. Employment has increased throughout the district so generally that involuntary unemployment has practically disappeared. A wage increase in the lumber industry of approximately 10 per cent occurred during the month. It is the first increase since the business recession began in 1920. With the exception of San Francisco, the principal manufacturing cities of the district report steady increases in the number of men employed each month, and a substantial increase of manufacturing activity as compared with June, 1921. An unfavorable aspect of the business situation is the increasing number of business failures reported.

Productive activity also continues to increase. Lumber and log production during June exceeded the figures of the previous months of the year, and were 50 per cent and 20 per cent respectively in excess of output in June, 1921. Of the seventeen copper mines of the district, eight are now operating, compared with two a year ago, and their May, 1922, output of 23,613,000 pounds of copper was nearly 1,000,000 pounds larger than the April, 1922, output. Petroleum production during June was less than 1 per cent smaller than the record output of the preceding month, and stocks of crude oil continued to increase to 43,700,000 barrels, being on June 30, 46 per cent in excess of stocks held a year ago. On July 15 a reduction of

approximately 25 cents per barrel in crude oil prices was announced, the first change since the reduction of 25 cents per barrel in August, 1921. Gasoline stocks on May 31, 1922, had declined 14.3 per cent during the month, and were 18.7 per cent less than they were a year ago, on May 31, 1921. Building activity during June was exceeded only during April.

The grain crops of the district have suffered on account of unusually dry weather during June, and the total wheat yield is now estimated at 103,211,000 bushels compared with a final yield of 122,000,000 bushels during 1921. The hot weather has been unfavorable also to the growth of forage crops and pastures in the livestock areas of the district, but the condition of the stock in most sections is still reported to be good. Warm weather, which damaged the grain crops and pastures of the district, was beneficial for crops of ripening fruit. The yields of peaches and pears generally, and of the other commercial fruits in California, will be almost without exception larger than they were last year. Shipments of green fruits to eastern markets are proceeding normally. Fruit canners in California are planning a 1922 pack which will be about 15 to 20 per cent larger than the pack of 8,500,000 cases in 1921 with opening prices, announced early in July, slightly higher than the prices quoted for that pack.

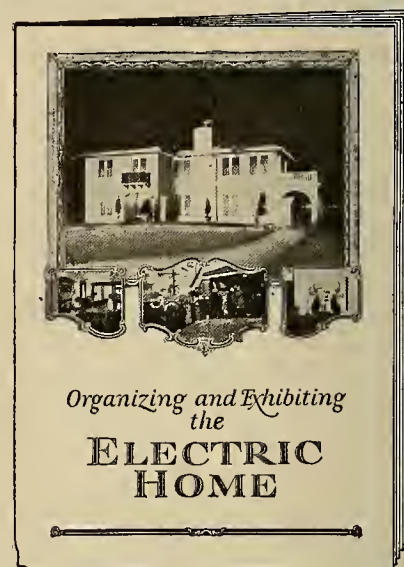
Notwithstanding the increasing activity of production and business, bank credit generally continues to be abundant and cheaper. Prevailing interest rates charged by banks in the larger centers are $5\frac{1}{2}$ to 6 per cent, and in the agricultural regions decreased slightly during June. Effective July 8, the rediscount rate of this bank was reduced from $4\frac{1}{2}$ to 4 per cent for all classes of paper. A temporary increase in borrowings by the city banks from the reserve bank attending the closing of the fiscal year on June 30 was almost cancelled by July 12, total rediscounts of this bank on that date being \$42,000,000 compared with a total of \$40,000,000 on June 14. Despite the increase in agricultural activity at this season throughout the district, repayments by country banks of their rediscounts with the Reserve Bank in general continued to exceed their new borrowings.

A destructive fire at McGill, Nevada on July 9, destroyed the concentrating plant of the Nevada Consolidated Copper plant and much of the timber of the adjacent mountains. A strong wind from the valley was all that saved the other buildings of the town.

The rolling mills at Yawata, Japan, opened and operated by the government, will be completely electrified as the result of a series of exhaustive experiments. It is estimated that the new equipment necessary to transform the plant will cost 15,000,000 yen or \$7,500,000.

Society Issues Interesting Book on Electrical Homes

The Society for Electrical Development has issued a monograph on "Organizing and Exhibiting the Electric Home" which deals with the subject very comprehensively from the formation of the committees to the closing of the exhibition. An historical foreword, placing the date of the first real electric home as far back as 1882 and giving other results of a careful research, will be of interest. This booklet is in the nature of a reference book and will be invaluable to leagues who have already put on electric homes and others contemplating them. To the former it will suggest ideas which may be incorporated in future homes. To the latter its value will be apparent from the statement in the foreword that "It may save them much unnecessary preliminary work and assist them in avoiding possible pitfalls."



Facsimile of the new monograph published by the Society for Electrical Development, Inc., describing the methods of staging an electrical home.

The booklet, in its 64 pages, contains illustrations of many electric homes and a chart giving an analysis of the details of seventeen successful homes in this country and Canada. A map and list of homes which have already been exhibited and others contemplated visualizes the extent to which this medium has been used throughout the country as a means of educating the public to "Do It Electrically." A page of statistics will also be found of exceptional interest.

Members of the Society have already received the number of copies to which they are entitled and can obtain extra copies at the nominal cost of 50 cents. This booklet has also been made available to non-members of the Society at a cost of \$1.00 per copy.

The Kootenai Power Company, which also operates in the Coeur d'Alene district, will have its valuation hearing before the public utilities commission of Idaho on August 16. This company's property inventory was filed September 22, 1919.

Meetings of Interest to Western Men

Denver League Proposes National Electrical Gathering

If plans which the Electrical Co-operative League of Denver are developing materialize, the first national meeting of electrical league and association representatives will be held at Glenwood Springs, Col., in September.

Questionnaires have been sent to all electrical organizations asking their opinion as to the feasibility of holding such a meeting in the Rocky Mountain territory and the support of the major national organizations has similarly been requested, according to E. C. Headrick, chairman of the Denver organization. It is planned to hold the meeting at the same time as the annual conventions of the Rocky Mountain division of the N. E. L. A. and that of the Colorado Electric Light, Power and Railway Association, at Glenwood Springs, September 11 to 13, or on such dates thereabouts as would be to the best interests of the meeting. It is believed that plans for joint entertainment can be effected, according to the Denver League, and that a program can be outlined which will allow ample opportunity for the consideration of all problems which might be brought before the first meeting of cooperative league representatives.

Definite decision as to the advisability of holding the meeting will be withheld until favorable reaction is secured from the other organizations interested in the movement.

New Officers Elected for Calif. Cooperative Campaign

At a meeting of the Advisory Committee of the California Electrical Co-operative Campaign, held in Los Angeles on July 21, R. E. Fisher, vice-president in charge of sales, Pacific Gas and Electric Company, was elected chairman to succeed A. W. Childs, retired, and K. E. Van Kuran, district manager of the Westinghouse Electric and Manufacturing Company, Los Angeles, was elected vice-chairman to succeed G. E. Arbogast, resigned. P. H. Booth, district manager, Edison Electric Appliance Company, succeeds R. M. Alvord; W. S. Berry, sales manager of the

Western Electric Company, San Francisco, succeeds H. L. Harper, and W. L. Frost, manager commercial department of the Southern California Edison Company, succeeds A. W. Childs as members of the Advisory Committee. H. H. Walker is temporary representative of the Southern District, California State Association Electrical Contractors and Dealers, to succeed G. E. Arbogast.

The above men were all present at the meeting of this day and took up their duties as members of the Advisory Committee. The old members of the Advisory Committee present, other than those listed above, were Messrs. Bigelow, Courtright, Hillis and Young.

Mr. Fisher, in accepting the chairmanship, announced that he had not determined on a policy for the ensuing year, but expressed the opinion that the work of the Convenience Outlet Committee and the Water and Power Bill should receive most attention.

City of Los Angeles to Enlarge San Francisco Plant

As a result of taking over the city distribution system of the Southern California Edison Company, the city of Los Angeles is preparing to increase its generating facilities. When the San Francisco No. 1 Plant was constructed ten years ago, provision was made for a fourth unit in addition to the three placed in service at that time. This fourth unit is now to be installed. The contract for furnishing the impulse turbine, which will develop a maximum of 16,000 hp., has been awarded to the Pelton Water Wheel Company of San Francisco, which furnished the other three turbines. The 12,000-kva. generator will be furnished by the Westinghouse Electric and Manufacturing Company. The Pelton company will also supply a 57-inch needle valve. The effective head at this plant ranges between 800 and 900 feet.

Examination for the position of Valuation Engineer in special Income Tax work is announced by the U. S. Civil Service. The salary varies from \$3,600 to \$4,800 a year and applications will be rated as received until September 1.

Plans Complete for California Contractor-Dealers' Meeting

Plans for the annual convention of the California State Association of Electrical Contractors and Dealers, to be held at Santa Cruz, August 18 and 19, indicate that this session will be one of the most successful in the history of the organization, according to those in charge of the program. There will be sessions devoted to present day problems of the retail branch of the industry, discussion of the Safety Rules and some new surveys of industrial and illumination development.

The convention will open Friday morning, August 18, with a business session. Friday afternoon's meeting will be devoted to the subject of illumination and will be in charge of Clark Baker, assistant to the Pacific Coast general manager of the National Lamp Works, and E. Boyd, manager of the motor department of the General Electric Company's San Francisco office. Saturday morning will be devoted to a discussion of the Electrical Utilization Safety Orders, under the direction of G. E. Kimball, electrical engineer of the California Industrial Accident Commission. Saturday afternoon's program has not been announced, but it is understood that there will be one or two speakers, followed by the election of officers. The convention will conclude with the banquet Saturday evening.

Elaborate plans are being made for the entertainment of the visitors. There will be dancing Friday evening.

The convention headquarters will be at the Casa Del Rey Hotel. Special rates and arrangements have been made and those intending to take part in the convention have been urged to send reservations to J. W. Redpath, secretary of the association.

Washington Lumber Exports Quadrupled in 1922

Lumber exports from Washington for the first quarter this year quadrupled exports for the first three months of 1921. The exports to foreign countries amounted to 183,613,923 feet board measure, as compared with 42,115,913 feet board measure for the first three months of 1921, according to figures furnished by the Pacific Coast Lumber Inspection Bureau. Of the foreign shipments, Japan was the heaviest purchaser, with Australia second and China third. Countries on the west coast of South America bought 9,060,495 feet from Washington lumber mills. In the domestic trade, California was the best customer, having purchased 204,413,443 feet board measure. More than 70,000,000 feet were shipped to the Atlantic seaboard, 118,761,119 feet to Panama and 638,110 feet to Alaska.

North Pacific Coast fir has won its way into the Philadelphia market, according to advices received by a number of leading lumber manufacturers in Seattle, who are advised that Philadelphia yards have agreed to stock large quantities of lumber from the west coast, never before handled. The opening of the new market will give a big boost to water shipments of lumber to the Atlantic Coast by the Panama Canal.

COMING EVENTS

PACIFIC COAST DIVISION, AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS

Annual Meeting—Vancouver, B. C.—August 8-11, 1922

PACIFIC COAST DIVISION, NATIONAL ELECTRICAL SUPPLY JOBBERS' ASSOCIATION

Quarterly Meeting—Del Monte—August 10-12, 1922

CALIFORNIA STATE ASSOCIATION OF ELECTRICAL CONTRACTORS AND DEALERS

Annual Convention—Santa Cruz—August 17-19, 1922

SOUTHERN IDAHO ASSOCIATION OF ELECTRICAL CONTRACTOR-DEALERS

Annual Convention—Hailey, Idaho—August 25-26, 1922

INVESTMENT BANKERS ASSOCIATION OF AMERICA

Annual Convention—Del Monte—October 7-11, 1922

Norwood W. Brockett of the legal department of the Puget Sound Power and Light Company of Seattle, is the new president of the Northwest Electric Light and Power Association. Mr. Brockett became a member of the legal department of the Snoqualmie Falls Power Company of Seattle in 1902 and upon the consolidation of that company with the Stone and Webster interests, joined the staff of the present Puget Sound Power and Light Company. He was one of the organizers of the Northwest Electric Light and Power Association in 1907 and has been actively connected with it since that time. He was the first executive secretary of the organization and served in that capacity



N. W. BROCKETT

for seven years. His activities have been largely along the lines of public policy, although he has acted as spokesman for the various sections at practically every hearing before the Washington Department of Public Works where general matters affecting the light and power industry were under consideration. He has the distinction of attending every convention and executive committee meeting of the association except during the period he served as a captain of field artillery in France. The association looks forward to a year of constructive development under his leadership.

Richard Sasche, chief engineer of the California State Railroad Commission, recently returned to San Francisco, following his participation in a conference held in Des Moines to formulate plans to resist the attempt of the railroads of the nation to increase by \$10,000,000,000 the tentative valuations established by the Interstate Commerce Commission for rate-making purposes. The California commission will cooperate with other utility bodies throughout the nation in resisting any attempts on the part of the railroads to take such steps.

C. W. King of the C. W. King Company, electrical motor and equipment dealers of San Francisco, is now on an eastern buying trip to get 3,000 hp. in electrical motors and 1,000 tons of wrought iron pipe.

J. L. Schroyer, of the engineering department of the Edison Electric Appliance Company of Chicago, is visiting the Pacific Coast investigating the market for electric ranges and heavy duty baking equipment. The West, with its cheap power, is a great potential market for equipment of this kind.

Personals

Harry Chandler, publisher of the Los Angeles Times, recently received the honorary degree of Master of Arts from Dartmouth College, in recognition of his services as a journalist and a citizen.

J. V. Davies, chief engineer in charge of the water supply system of New York, J. Waldo Smith, of New York, consulting engineer on the Hudson and Pennsylvania tunnels, and David W. Brunton of Denver have been selected as a consulting board to act with the Colorado Moffat tunnel commission on the construction of the projected tunnel through James Peak.

H. C. George, oil recovery engineer of the U. S. Bureau of Mines, with headquarters at the San Francisco office of the Bureau, is in Alaska in connection with investigations being carried on by the Bureau.

Jos. Paulson has just recently assumed his new duties as representative of the A. G. Manufacturing Company with headquarters in Los Angeles, succeeding A. B. Martin, resigned, who has taken a position a representative of the Safety Electric Products Company in the Pacific-Northwest. Mr. Paulson has been with the Illinois Electric Company for the last seven years as Purchasing Agent and Office Manager. Prior to that time, he had spent five years with the Western Electric Company in the Atlanta and Seattle districts. Mr. Paulson is a graduate of the Oregon Agricultural College and completed his training at the Westinghouse Electric & Manufacturing Company's works at East Pittsburgh where he remained in the Engineering Department for one and one-half years before going to their Atlanta office where he was chief correspondent.

H. D. Titus, formerly with McDonald & Kahn, building contractors and architects of Los Angeles, has just recently been appointed district representative in the Southwest of the Square D Company, manufacturers of safety switches. Mr. Titus' experience in the building game should prove of inestimable value to the local trade.

Clare N. Stannard, vice-president and general manager of the Denver Gas and Electric Light Company, recently entertained the members of the Company's baseball team, which is heading the city commercial baseball league, at a dinner at the Denver Athletic club.

G. A. Marr, of Salt Lake City, has been appointed General Counsel of the War Finance Corporation, effective July 1, 1922. Mr. Marr has been a member of the law firm of Pierce, Critchlow & Marr for many years and has had extensive experience in the handling of legal matters connected with agricul-

B. F. Boynton, claim agent of the Portland Railway Light & Power Company was elected secretary-treasurer of the Pacific Claim Agents' Association, at the annual convention held in Los Angeles recently. The 1923 convention of the association will be held in Portland.

William C. Fitch, freight claim agent for the Southern Pacific Company, was chosen chairman of the freight claim division of the American Railway Association, at the recent convention of that organization at Denver. This is the first time in history that a Pacific Coast man has been elected to this position in the national organization. tural and live stock financing. For several months he was secretary of the Agricultural Loan Agency of the War Finance Corporation at Salt Lake City, where he gained an intimate knowledge of the operations of the Corporation under the Agricultural Credits Act, and more recently he has served as Assistant General Counsel.

Fred Athearn, general counsel for the Union Pacific Railway, recently presented arguments in favor of the unmerging of the Southern Pacific and Central Pacific lines before the San Francisco Electrical Development League. This is one of the most vital problems affecting the West to arise in many months and the electrical industry is showing a keen interest in it.

Magnus Alexander, managing director of the National Industrial Conference Board, will visit the West during the month of August. Mr. Alexander is coming to this section of the country for the purpose of holding conferences with the leading manufacturers, bankers and merchants on the general industrial situation.

R. E. Fisher, vice-president in charge of sales of the Pacific Gas and Electric Company, has been elected chairman of advisory committee of the California Electrical Cooperative Campaign, to succeed A. W. Childs, who has resigned. Mr. Fisher brings to the Cooperative Campaign a wide range of experience in the electrical industry. Previous to entering the employ of the Pacific Gas and Electric Company twelve years ago, he was with both the Pacific States Electric Company and the General Electric Company. He was also engaged



R. E. FISHER

in the contracting business in San Francisco. He was promoted to the post of commercial manager of the company in 1920 and became vice-president in charge of sales early in 1922. Mr. Fisher is also a member of the board of directors of the California Development Association and his connection with this organization will bring new ideas into the affairs of the campaign.

Major H. S. Bannion, assistant chief engineer for the Federal Power Commission, is making a tour of inspection of power sites in Idaho and the Pacific Northwest. He recently inspected the Twin Falls and Upper Salmon Falls sites, upon which filings have been made by the Idaho Power Company. He also visited developed power projects in this district. His trip of inspection of power development, actual and potential, carried him along the Snake River and down the Columbia River to Portland.

H. B. Bole of the Cleveland Electric Motor Company of Cleveland, Ohio, is a recent Pacific Coast visitor. Mr. Bole was conducting an investigation of the market possibilities in this section.

Dr. W. F. Durand, dean of the department of mechanical engineering of Stanford University, following his recent return from a trip abroad, gave a highly interesting informal talk before the San Francisco Engineers' Club on "Observations in Southern Europe and Northern Africa."

Samuel M. Vauclain, president of the Baldwin Locomotive Works, during a recent visit to the Pacific Coast, gave a highly optimistic statement of the business situation in the country at the present time. He was especially enthusiastic over affairs in the West.

A. E. Kramer, manager of the Apex-Rotarex department of the Illinois Electric Company of Chicago, is in Los Angeles on a business trip.

Anson H. Rees, formerly city salesman, has been appointed stores manager of the Illinois Electric Company in Los Angeles. Mr. Rees takes over the duties of this position after fifteen years of varied experience in the electrical industry. His first connection was with the Laclede Power Company of St. Louis, after which he completed his studies as an electrical engineer in the Missouri State University. Upon his arrival in California in 1898 he became purchasing agent for the Ventura Power Company and shortly afterward



A. H. REES

became general contract agent in charge of new business and advertising in the northern division of the San Joaquin Light and Power Corporation. For a number of years he has been city salesman for the Illinois Electric Company, calling on corporation trade. He will now have charge of the general offices, purchasing and service departments of the company.

R. F. Hamilton, consulting engineer of the Sociedad Espanola de Construcion Naval, Madrid, Spain, and a party of engineers and officials of the Northern Railways of Spain were recently entertained in San Francisco by C. E. Heise and R. E. Martinez of the Westinghouse Electric and Manufacturing Company. The party is making a tour of the electrified railways of the West. With Mr. Hamilton were Sr. Don Moreno Ossorio, general manager, and Sr. Don Mario Visni Cabalero, chief engineer, of the Spanish Northern Railways, Professor Don Jose Pulgar, professor of electrical engineering at the Instituto Catolico de Artes e Industrias, and Sr. Don Luis Sanchez Cuervo, professor of electrical engineering of the Civil Engineering School of Madrid. Like other European countries, Spain is planning to manufacture as much as possible of the electrical apparatus required for its railways. The party visited many of the more important power plants, factories and electrifications of the East and West. They came to San Francisco from Deer Lodge, Mont., Seattle and Portland, and they returned to New York via Los Angeles and the Grand Canyon. They will sail from New York to France on August 2.

J. G. Berry, sales manager of the General Electric Company since 1917 and manager of its railway department for many years, and A. H. Jackson of the law department, were recently elected vice-presidents of the company. Mr. Berry has been with the General Electric Company for 32 years. Mr. Jackson has been head of the legal department of the company for a number of years.

H. B. Woodill, president of the Woodill and Hulse Electric Company of Los Angeles, recently left for a two months' pleasure trip to the Pacific Northwest and Alaska.

Nelson A. Eckart, for many years a member of the San Francisco city engineer's staff, has been appointed safety engineer for the city on the Hetch Hetchy project. A vigorous campaign of safety on all building and construction projects has been undertaken by the California State Industrial Accident Commission under the direction of H. M. Wolfkin, director of safety, and the appointment of Mr. Eckart as safety engineer is the initial step on the part of the city of San Francisco to actively participate in this campaign.

Adrian Corbett of London, attorney for the Royal Dutch Shell interests, has recently completed a tour of inspection of the vast oil holdings of that company in California. In a statement issued while in San Francisco, Mr. Corbett put to flight the rumors that the British concern was contemplating taking over the control of the Union Oil Company's properties in America.

H. O. Adams, sales manager of the Electric Vacuum Cleaner Company of Cleveland, Ohio, is a recent Pacific Coast visitor.

A. H. Carhart, recreational engineer for the United States Forest Service with headquarters in Denver, has recently completed an extensive survey of the Washakie and Teton national forests in Wyoming with a view of reporting on a system of development whereby these two districts may be made accessible to tourists.

Obituary

Albert Sechrist, president and general manager of the Albert Sechrist Manufacturing Company of Denver, died suddenly July 11, after a nervous breakdown with pneumonia as a complication. Mr. Sechrist was a resident of Denver for more than fifty years and was considered a pioneer of the electrical industry of that city. In addition to the extensive lighting fixture manufacturing carried on by his company,



ALBERT SECHRIST

he developed within the last couple of years an electric pressure cooker which he recently introduced on the eastern and western markets, and it is believed that as a result of his strenuous effort on these trips his breakdown was induced. After graduating from the University of Denver he located at Greeley where he managed the first electric light company in that city, later returning to Denver where he purchased the fixture department of the Denver Gas and Electric Light Company, from which his present company is the outgrowth. For a number of years he has been active in Y. M. C. A. work in the Rocky Mountain region, and during the first year of its organization served as a member of the Advisory Board of the Denver Electrical Cooperative League.

Alexander H. Patterson, for many years vice-president and general manager of the Phoenix Glass Company of Pittsburg, died at his home in New York City recently. Mr. Patterson was one of the pioneers in the electrical industry on the Pacific Coast, having sold lighting fixtures in this section during the early '70's. His last visit to the West was in 1920.

Claude P. Gordon, electrical engineer and construction superintendent for Thompson and Castleton, Inc., Seattle, died in Wichita Falls, Tex., recently. Mr. Gordon was in charge of the electrification of a dredge and the installation of the electrical equipment for a dam being constructed at Maybelle, Tex., by the Puget Sound Bridge and Dredging Company. Mr. Gordon was 29 years old and a member of the American Institute of Electrical Engineers.

The Majestic Electric Development Company of San Francisco has just recently opened a branch office in Los Angeles at 204 No. Los Angeles Street with Arthur Kempston as district sales manager for Southern California.

The U. S. Electrical Manufacturing Company of Los Angeles announces the opening of an office in San Francisco some time during the month of August, at which time they will have a representative in the northern city to look after the interests of the company in that territory.

The Electrical Products Corporation of Los Angeles, of which Paul Howse is president, purchased the interests of Fred W. Miller, theatre lighting equipment specialist, on July 14. This firm will continue to operate as the theatre equipment division of the Electrical Products Corporation with Claude D. Seaman as manager. Mr. Miller started the original business in 1914 on a capital of \$400 and reports that he has taken \$62,000 out of this business during the past eight years. He is retiring to enter the oil business.

The Hall Electric Utilities Company has just recently been incorporated in Los Angeles under the name of Hall-Webb Company and has moved to 320 So. San Pedro Street. They are representatives for the Westco domestic pressure water system, Chippewa deep well pressure water system, Black & Decker drills and garage equipment, and the Matthews electric light and power plants for ranches and yachts. Mr. Hall has been conducting the Hall Electric Utilities Company for the past four years. Prior to that time he had been manager of the industrial department of the General Electric Company in Los Angeles. Mr. Webb has been connected with the A. J. Deer Company of Hornell, New York, manufacturers of electrical meat grinding equipment.

Leslie De Baker, formerly of the Western Light and Power Company in Boulder, has opened the Electric Shop, a contracting firm, at Fort Morgan, Colo.

B. C. Ritter, formerly of the Western Light and Power Company at Boulder, Colorado, has taken charge of the Frigidaire refrigerator department for E. H. Frazier, the Delco Light Company, distributor in Denver.

Haag Bros. Co., Peoria, Ill., will shortly place on the market a new type "Oscillator" washing machine which has many refinements in design. The machine will have an all-metal copper tub, full swinging wringer, eight sheet capacity and 12-in. wringer rolls. The belt has been eliminated in the new machine, which is friction driven. It is equipped with machine cut gears which run in a continual oil bath.

Harvey Hubbell, Inc., Bridgeport, Conn., has issued a series of five attractive circulars describing new specialties which have been produced by the company recently. Sockets, T-caps, shadeholders, plugs and a new lighting unit furnish the material for the various circulars. All are done in color and make attractive counter literature for the contractor-dealer.

The Killark Electric Manufacturing Company, St. Louis, has just brought out a new conduit fitting known as type FB (entrance fitting for 2½ and 3 in. conduit). The fitting consists of three

Manufacturer, Dealer, and Jobber Activities

parts, a cover, a hub and a plate holding 2, 3 or 4 porcelain bushings. The fitting has been designed for use on either vertical or horizontal pipe and is furnished in either japanned or galvanized finish.

The Westinghouse Electric & Manufacturing Company, East Pittsburgh, has just issued a new catalog supplement describing the Westinghouse line of insulating and soldering compounds and announcing the extension of that line of products. The materials discussed in the supplement are baking and air-drying varnishes, insulating compounds, finishing materials, including paints, enamels, lacquers, etc., insulating glue, soldering flux and lubricating oil.

The Hobart Brothers Company, Troy, Ohio, has just placed on the market a new constant potential battery charger. The device is smaller than average and has been designed primarily for installation in the small shop. The machine has a capacity of 200 amperes.

Schweitzer & Conrad, Inc., Chicago, has just issued a new bulletin, "Lightning Arrester Performance" describing the company's graded resistance sphere gap arrester for high tension lines.

The Magee Furnace Company, Boston, Mass., has just placed on the market a new combination gas and electric range which is known as the "Electric-Gas." The electric half of the range comprises an insulated electric oven and an electric broiler controlled from a specially designed switchboard while the gas half consists of four gas burners and a simmerer which are automatically lighted from a push button. The range is also made for straight electric and

straight gas operation as well as for the combination.

The Esterline-Angus Company, Indianapolis, Ind., has developed an instrument which will measure both alternating and direct current voltage. It is known as the "Utility" voltmeter and has been designed to work with the "Utility" wattmeter, which also records on both alternating and direct current circuits. Literature has been issued on this subject and may be had upon application to the company.

The Westinghouse Electric & Manufacturing Company, East Pittsburgh, has just issued Reprint 118, entitled "The Question of Inductive Interference and Electrolysis as Related to Railroad Electrification." The publication reviews briefly the causes of inductive interference and the remedial measures which have been applied, citing definite experiences with alternating single phase installations.

The Rome Wire Company, Rome, N. Y., announces that it has taken an interest in the Atlantic Insulated Wire and Cable Company. The latter company will continue to manufacture its well known brands of rubber covered wires and cable.

The Allis-Chalmers Manufacturing Company, Milwaukee, Wis., has just issued Bulletin No. 1124 entitled "Synchronous Motors." The booklet contains a large number of illustrations of the adaptability of this type of motor to commercial usage in installations requiring either belted, coupled or direct connected service. Commercial applications are shown with the motor driving air compressors motor-generator sets, rubber mill machinery, ice and refrigerating machinery, paper making machinery and mining apparatus.

The Coeur d'Alene Electric Shop is featuring a full line of electrical appliances at Coeur d'Alene, Idaho. Proprietors: J. E. Whitney and T. J. Robertson.



NOW.—SPEAKING OF FISH STORIES.—

We hate to take advantage of our position to appear to boast about our piscatorial prowess, but "Ye Editors," Tenney and Gallison, reading from left to right (in the top row), hereby challenge members of the electrical industry to show something better. The other fish (two lower rows) were rainbow trout, captured with flies in the Feather River, without the aid of dynamite or friendly Indians, all in one evening.

Business Outlook in Western Market Centers

Reflecting the Trend of Community Thought on Conditions and Events Affecting Business and Industrial Activities Throughout the West

Compiled and edited for the Journal of Electricity and Western Industry by correspondents in all principal Western cities.

SALT LAKE CITY

Reports from practically all sections of the intermountain territory indicate that business is still on the upward trend.

Conditions in the mining districts are particularly favorable, especially in the silver and lead producing camps. In such mining centers as Park City and Eureka, there is more activity than has been seen for some time. At the present time the copper market is rather quiet and the price of the metal is still comparatively low. However, the present rate of production will continue at the Utah Copper Company, where operations have been gradually increased during the past few months.

In the general retail trade there is the usual summer slump in some lines, while in lumber and builders' hardware and other building commodities business is good.

Electrical dealers report a fair business in wiring material and various household appliances. Building activity continues at a very satisfactory pace.

The new electrical home which is now being exhibited in Salt Lake City, and the electrical exposition to be held there October 2 to 14, inclusive, are commanding much attention, both from the electrical people and the public in general.

Money is easier, and collections are fair.

SEATTLE

Business in Washington and the Puget Sound district shows steady and continual improvement, and figures show that the monthly purchases of individuals and concerns in Washington were \$400,000,000, as compared with \$370,000,000 for May of 1921.

Financial authorities express the opinion that the local banking situation reflects very creditably the stimulated industrial activity of this section, with a total of deposits as of June 30 of \$140,520,156.

June was one of the best construction months Seattle has experienced in many years, with permits valued at \$2,892,030 being issued. The past month's permits call for building construction of all classes, with a satisfactory volume of new home building. The total amount of money involved in buildings for which permits were issued during the first six months of the year, amounts to more than \$10,000,000.

Due to the customary mid-year repair season and July 4 holiday, lumber production in western Washington dropped 33 per cent below normal for the week ending July 8. Many districts of the

Puget Sound and Grays Harbor country are threatened with extreme log shortage, due to the fact that logging camps in many vicinities are either shut down or operating only part time on account of the fire menace.

PORTLAND

Building continues at the rapid pace set during the early months of this year and the total value of building construction was recently augmented by the announcement of plans for the construction of a \$2,000,000 office building.

Lumber production has fallen off slightly as a result of the usual mid-summer lull in the industry. Logging operations in many cases have been suspended owing to the forest fires that are raging throughout the Northwest. The damage from these fires to property and timber is running into the millions.

Although the fruit crop in this section is only about 50 per cent normal due to the sub-normal temperature last winter, the size and quality are unusually good, and it is expected that the higher prices brought by the exceptional quality will more than offset the loss due to the small crop.

Electrical jobbers and contractor-dealers report business very good and anywhere from 25 to 150 per cent better than for the same period last year. The record construction program is partly responsible for the increased sales.

LOS ANGELES

There were 1,689 building permits issued for the first fifteen days of July, or a total of \$3,581,294, which represents an increase over the corresponding period of the year 1921 of approximately 25 per cent. This brings the total building for the year to \$63,040,544.

Bank clearings for the first fifteen days of July amounted to \$216,558,218, which compares with the corresponding period of 1921 as an increase of approximately 25 per cent.

The sale of electric fans during the year 1922 has proven very good despite the weather, which has been cooler than the previous year. This is especially true of ceiling fans. On the whole, business at this season of the year has proven better than the corresponding period last year. A shortage of conduit is reported in Los Angeles and southern California, due to the enormous number of buildings which are being constructed throughout the southern portion of the state. The money market is comparatively easy, but collections from the smaller concerns are still slow in most cases.

DENVER

Building operations kept up during July, the permits for the first eighteen days alone totaling \$558,000. This building boom has resulted in a marked increase in employment, according to the U. S. Department of Labor, which has just completed an extensive industrial survey of this city.

"No large industrial plants in Denver are closed," the report says. "A few are operating on part time but all are gradually increasing their forces of workers. All building construction plants are operating to capacity with increased forces."

According to the post office department, June receipts at the local office were the highest in several years. They amounted to \$225,251.51, an increase of 11 per cent over last year.

The Denver bank statements of June 30 showed total deposits of \$152,086,673, which is the highest figure on record since November 15, 1920. Deposits increased \$3,500,000 during May and June and bank clearings for the same period showed an increase of 9 per cent over the corresponding period the year before.

The railroad and coal strikes have not improved business morale. The printing business is in a bad slump. Department store business is slack. Electrical dealers report a very slow movement of appliances.

SAN FRANCISCO

The reduction in interest rates during the past three months has exceeded the expectations of the most optimistic. The present liberal supply of available funds for investment makes it easy for corporations to issue six per cent bonds that two years ago had to pay eight per cent for money.

Reports on foreign trade for the month of May show an appreciable gain over any previous month of 1922 and indicate that commerce is gradually picking up.

Preparations for California's second annual Industries Exposition to be held in October indicate that exhibits will be more complete than last year. Industrial activity is resuming and factories are putting more men to work.

California canneries in this district are making preparations for the greatest pack of fruit in history. There are no holdover supplies from last year and the demand is strong both for domestic use and for export.

Electrical appliances, owing to the season, are moving slowly. Trade in practically all lines is feeling the summer slump. However, jobbers are making preparations for an active fall buying campaign.

Construction News and Industrial Developments

Suggesting to the Engineer, Contractor, Manufacturer, Dealer, Agent and
All Business Men Opportunities for New Business

Bridges

Cal., Carpinteria—The board of supervisors will shortly advertise for bids for the construction of a concrete and reinforced steel bridge across Santa Monica Creek at Foothill Boulevard.

Cal., Colusa—The county supervisors have awarded the contract for the motorization of the Colusa drawbridge to Jenkins and Wells for \$13,825.

Colorado, Fort Morgan—The Colorado Bridge and Construction Company of Denver has been awarded the contract for the construction of a concrete bridge over the South Platte River on North Main Street at a cost of \$80,939.39. An ornamental lighting system will be installed on the bridge after it is completed.

Idaho, Caldwell—Charles E. Silbaugh, contractor, who will erect the \$47,000 new steel bridge over the Boise River here, is assembling material preparatory to commencing construction. The bridge will have concrete abutments and foundations, and will be about 510 ft. in length and 20 ft. wide. It will have three spans of 170 ft. each. The floor will be of the laminated wood type, covered with asphaltic wearing surface. It is estimated that the work will occupy about three months' time.

Wash., Seattle—The Reliable Iron & Wire Works, on a bid of \$28,406, received the contract for installing crossing towers for the Spokane Street bridge across the west waterway at Riverside.

Wash., Olympia—The Penn Bridge Company, of Beaver Falls, Pa., on a bid of \$283,296, received the contract for the construction of a new steel bridge across the Snake River, at Central Ferry, connecting Whitman and Garfield counties. The structure will be 700 ft. long, and quantities involved include 4,270 cu. yd. of concrete; 210,000 lb. of steel bars, and 1,900,000 lb. of structural steel.

Wash., Yakima—County commissioners of Yakima county will receive bids until August 5 for the construction of a steel bridge, 252 ft. long, with 20 ft. roadway, across the Naches River, at Painted Rocks. The bridge is estimated to cost \$40,000. W. C. Marion is county engineer.

Wash., Aberdeen—L. F. Isaacson has had plans drawn by the Strauss Basculer Bridge Co. of Chicago, for a basculer steel bridge over the Wishkah River. When the details are prepared the plans will be put up to the city council.

Wash., Kennewick—The Union Pacific Railroad will start work in six weeks on a new steel bridge across the Columbia River at Kennewick.

Buildings (Industrial)

Cal., Live Oak—Mill—K. M. Swearing, milling man of Salinas, is the head of a company which proposes to erect a \$30,000 grain warehouse and mill at Del Mar. The building will be of corrugated iron.

Cal., Petaluma—Silk Mill—Architect Brainerd Jones is preparing revised plans for the addition to the Belding Bros. silk mills in East Petaluma. The building will cost \$40,000.

Cal., Huntington Beach—Refinery—The Mutual Oil Refining Company will shortly commence the erection of an oil refinery on ten acres of land at Garfield and Huntington Sts.

Cal., Oakland—Plant—The Atlas Imperial Gas Engine Company is preparing to construct an addition to its present plant at Nineteenth Avenue and East Twelfth Street. The new plant will cover 44,000 sq. ft.

Cal., Napa—Packing House—The contract for the construction of an addition to the Growers' Packing and Warehouse Company's plant here has been awarded to the West Coast Construction Company. The estimated cost of the new building is \$65,000.

Cal., Lafayette—Factory—The Highland Manufacturing Company, of Chicago, has purchased several acres of land here where it proposes to erect a factory for the assembling of automobile accessories. Twenty cottages will also be built on the property for workmen.

Ore., Portland—Mill—The \$40,000 lumber mill of the Cameron Hogue Lumber Company will be rebuilt, according to announcement.

Wash., Seattle—Factory—The Washington Mattress Company has awarded a contract to the Stewart Construction Company of Seattle for a three-story and basement fireproof addition to its mattress manufacturing plant, to cost \$53,010. Structure will be 88 x 120 ft. and fireproof throughout.

Wash., Tacoma—Packing Plant—Thomas Carstens, packer, has started construction of the first unit of his new reinforced concrete and steel packing plant, which with equipment, will cost \$1,500,000, and will be completed in six months. Within two years the entire plant will be doubled, and the enlarged plant will permit expansion of present yearly output of \$10,000,000 to \$20,000,000. The concrete superstructure will be four stories high, 57 x 72 ft. with a wing 32 x 40 ft., three stories. P. V. Cornils, architect of the company, prepared the plans and will supervise the work.

Wash., Tacoma—Shops—H. A. Lyddon, superintendent of shops for the Northern Pacific Railroad, announces that a welding plant costing \$35,000, with equipment to cost \$70,000, will be built for the company in South Tacoma.

Wash., Spokane—Milk Plant—The Hazelwood Company, Ltd., Fred N. Martin, secretary-treasurer, has purchased a site 300 x 160 ft., on which will be erected a complete new milk products plant.

Wash., Spokane—Mill—The erection of a mill six miles from Deer Park is planned by the American Ochre Co. of Spokane.

Wash., Spokane—Lumber Mill—A modern lumber factory to cost \$100,000 is being built by the Potlatch Lumber Co. at Spokane.

Wash., Tacoma—Lumber Mill—The milling plant of the Peterman Manufacturing Company, which was damaged to the extent of approximately \$180,000 by fire, destroying the new electrically equipped mill and practically all of the stock, will be rebuilt immediately, according to plans announced by T. A. Peterman, president of the company.

Buildings (Miscellaneous)

Cal., Oakland—Office Building—The Tribune Publishing Company has announced that construction of a 19-story office and newspaper building adjacent to the company's present structure will commence shortly after August 1. The building will be of Class A construction. Plans have been prepared by Architect E. T. Foulkes of Oakland.

Colo., Denver—Oil Station—The Sommers Oil Company has purchased the property of the Bell Filling Station and Service Company at Fifteenth Street and Cleveland Place and will shortly replace it with a new building to be used for the same purpose, at an estimated cost of \$65,000, which will closely conform in architecture to the designs on the Civic Center across the street.

Colo., Boulder—Fraternity—The Sigma Nu Fraternity has started construction of a \$40,000 home on University Hill which will be an "electric frat house," it is said.

Colo., Fort Collins—Chemistry Building—A new chemistry building to cost \$117,000 has been started at the State Agricultural College. According to President C. A. Lory, the lighting and ventilating systems will be of the latest and most improved designs.

Colo., Denver—Garage—A \$50,000 service garage for the motor equipment of the local post office will shortly be built by James A. Curran at Twenty-third and Arapahoe Streets, according to a recent announcement of Postmaster Frank L. Dodge.

Ida., Idaho Falls—School—Fred Salih, of Idaho Falls, has been awarded the general contract for the building of a new modern high school at Cokeville, Wyoming. The amount of the contract is approximately \$65,000.

Ida., Sandpoint—School—Jasper & McLean, Spokane contractors, on a bid of \$81,580 secured contract for the erection of a high school building.

Ore., Portland—Office Building—Plans for the erection of a ten-story office building, costing more than \$2,000,000 on the site of the old Failing home, bounded by Fifth, Sixth, Taylor and Salmon Streets, are being promoted. Definite announcement is expected to be made soon.

Ore., Portland—Apartment—Zanello Brothers, general contractors, secured the contract and will start work immediately on the erection of a large apartment building estimated to cost \$110,000 to be built for Theo. Williams, Board of Trade Building, at the southeast corner of 19th and Davis Streets.

Ore., Portland—Store—Construction work on the new two-story building for the Howard Cooper Company at 361 Hawthorne Avenue between East Third Street and Grand Avenue, has started. The building will be of concrete and will cost approximately \$30,000 when completed. A. C. Myers is the contractor. W. W. Lucius, architect, drew the plans and specifications.

Ore., Prineville—Hotel—Construction work is expected to begin this month on Prineville's new \$100,000 hotel, which is being incorporated by Mrs. C. E. McDowell, Jay H. Upton and W. O. Hall. J. V. Bennes, Portland architect, is drawing plans.

Ore., Astoria—Theater—The management of the Astoria Amusement Co. has announced that a contract has been made for the construction of a new \$75,000 motion picture theater on the present site of the Liberty Theater on Commercial Street. E. W. Houghton, of Seattle, is to build the theater. Construction will start this fall.

Ore., Prineville—Hotel—John V. Bennes, Portland architect, is preparing plans for the erection of a new hotel to replace the one destroyed by fire recently. The hotel will be thoroughly modern and will cost in excess of \$100,000.

Ore., Portland—Apartments—Houghtaling & Dougan are preparing plans for a four-story apartment house to be built at the northeast corner of 13th and Market Streets. The building will be of brick construction and will cost about \$80,000. Ulrich & Co., in the Stock Exchange Building, represent the owners.

Ore., Astoria—Hospital—Architect Hicks, of Astoria, is preparing plans and specifications for the new \$200,000 Fraternal Hospital to be erected at the corner of Sixteenth and Franklin Avenue, upon property 200 by 200 ft. in size recently purchased by the Fraternal Hospital Association from the Van Dusens.

Utah, Ogden—Bakery—Construction has been started on the new two-story unit of the Ogden Baking Company plant on Grant Avenue between Twenty-fifth and Twenty-sixth Streets. The building is to be of concrete, steel and brick construction, and will cost about \$50,000. The company this fall will install two new electric ovens for bread baking.

Wash., Vancouver—Lodge—A tract of land has been purchased by the Oregon and Washington state councils of the Knights of Pythias on which a home for these organizations will be erected. W. C. Knighton of this city will prepare the plans. It is expected that the building will cost about \$100,000.

Wash., Seattle—School—Preliminary sketches for a proposed \$60,000 high school to be built in Tenino, prepared in the Seattle offices of Woheb & Stanley, architects, have been approved and the preparation of the working drawings will be started immediately in the Olympia offices of the firm from where a call for bids on the general and sub-contracts will be issued early in August. According to announcement by Architect Stanley of the Seattle office, the building will be T shape, 208 ft. long, of modified colonial design.

Wash., Centralia—Store—John Hughes will commence immediately the erection of a brick store building at the corner of Tower Avenue and Locust Street. The building will be 97 x 120 ft. and one story high. It will cost about \$20,000.

Wash., Seattle—Club—A. H. Albertson, architect, Henry Building, announced that plans for the proposed \$400,000 nurses' club building to be erected in Seattle early next year have been started. The projected building is to be of brick and steel construction, seven stories in height, and will be one of the finest buildings on the Pacific Coast.

Wash., Wenatchee—Warehouse—A contract has been let by the Lake Chelan fruit growers to A. A. Vandivort for the erection of a modern frost-proof, air-cooled, storage warehouse.

Wash., Seattle—Apartment—The largest building contract ever let in Seattle was recently signed by the Dexter Horton Estate in awarding contract to the Puget Sound Bridge & Dredging Company for removing the Third Avenue half of the New York Block and erecting the first unit of the proposed bank and office building to cost, when completed, \$5,000,000. The first unit will be 12 stories high, costing \$2,500,000, and work will proceed immediately.

Wash., Port Angeles—School—Chris Kuppler & Sons, here, received the contract for erection of three school buildings, costing \$67,000.

Wash., Galla Walla—Apartment—H. L. Neslin plans the erection of an apartment house here, to cater only to families with children. Building will cost approximately \$50,000.

Wash., Everett—School—W. C. Pabst received the contract for erection of the three-story brick addition to Garfield School, to be 64 x 125 ft. and to cost \$60,000.

Wash., Seattle—Y. M. C. A.—Murdock & Eckman, Thompson Building, on a bid of \$46,600, received contract for the Y. M. C. A. Building on the University Campus.

Wash., Seattle—Nurses' Home—Architect A. H. Albertson, Henry Building, is preparing plans for a proposed Nurses' Club and Home, to cost \$400,000 and to be erected by the King County Association of Graduate Nurses. Structure will contain 200 rooms, and will be 120 x 90 ft. in size.

Wash., Seattle—School—St. Alphonsus Parish has awarded to Contractor Charles H. Schaar, 721 Twenty-first Avenue, the contract for a \$100,000 school to be built at West 58th Street. Structure will be three stories, 59 x 199 ft.

Wash., Seattle—Apartment—Louis Levy plans the erection of a five-story and basement apartment house, costing \$100,000, to be built immediately. Building will contain 44 apartments of two and three rooms each, and will be electrically equipped throughout, including electric automatic elevators.

Wash., Aberdeen—Hotel—The Washington Hotel Company heads the financing of a proposed \$300,000 hotel to be built here, and to contain 200 rooms. Architect A. H. Albertson, Seattle, has prepared plans, and the Rotary and Kiwanis Clubs are backing the project. Plans provide for a four-story building, 100 x 100 ft. in size.

Wash., Tacoma—Hospital—Construction of the U. S. Veterans' Hospital at Camp Lewis, to cost \$3,000,000, will start within 90 days, according to Col. C. B. Forbes, head of the Veterans' Bureau, who is now in Tacoma. A site has been selected, and hospital will cover 30 acres of land, the entire site being 300 acres.

Highways

Cal., Sacramento—A contract for grading approximately eight miles of highway in Lassen county has been awarded to the Warren Construction Company by the State Highway Commission. The bid was \$37,056.

Cal., Napa—The board of supervisors has awarded the contract for the construction of four miles of concrete highway from the city limits to Brown's Valley to the Western Construction Company of San Francisco on a bid of \$47,449.75. Work will be completed within three months.

Cal., Sacramento—The State Highway Commission has awarded the contract for paving 10.82 miles of highway in Santa Barbara county to the Southwest Paving Company of Los Angeles at a price of \$103,705. All materials are to be furnished by the state.

Cal., Sacramento—A contract for paving 8.77 miles of highway in Orange county has been awarded to George H. Oswald, of Los Angeles, on a bid of \$126,615. With the materials which are to be furnished by the state, the total cost for the job will be \$193,160.70.

Cal., Sacramento—The State Highway Commission has awarded a contract for grading sixteen miles of the Redwood Highway in Humboldt county to the Pacific Construction Company of San Francisco on a bid of \$439,211.50. This is approximately \$50,000 less than the estimate prepared by the commission's engineers.

Ore., La Grand—The county court authorized the letting of the Wallowa hill contract to the Sloan Construction Co. The bid for 5.38 miles of road amounted to \$28,375. The section lies in the two counties, about four miles in Union and the remainder in Wallowa.

Wash., Spokane—The Triangle Construction Company, here, on a bid of \$36,562, received the contract for surfacing with gravel nine miles of road between Pa'louse and Garfield.

Wash., Seattle—The contract for the completion of the Orilla-Kent paving has been awarded to Cornell Bros. and Walsh of Tacoma on a bid of \$138,500. The job consists of laying 4.38 miles of concrete paving, twenty feet wide.

Wyo., Thermopolis—The Utah Construction Company has commenced work on the construction of fourteen miles of highway into Yellow-

stone National Park. The contract price is \$294,347 and it is expected that the work will require until April, 1923, to complete.

Irrigation Projects

Cal., Chico—Two thousand acres of land are included in the irrigation plans just completed by J. B. Thompson, local civil engineer. No irrigation district will be formed, but each farmer in the tract to be irrigated will pay \$41 per acre for the water. Water will be taken from the Sacramento River near Nord.

Cal., Oakdale—The board of directors of the Oakdale Irrigation District have called a special election for August 5 for the purpose of voting \$50,000 for needed improvements to the district.

Cal., Santa Barbara—A \$90,000 bond issue for the repair of the Gibraltar Dam carried at a recent election. Work will be completed before the winter rains.

Cal., Fall River Mills—The Fall River Irrigation District, comprising 13,000 acres in this vicinity, has been created as the result of a recent election. Under the present plans three large pumping stations will be built to raise the water from Fall River to the land to be irrigated.

Ore., Salem—Plans and specifications for the Crescent Lake reservoir for the storage of water for the Tumalo irrigation project have been filed with the state engineer and if approved bids will be called for. The approximate cost of the work will be \$40,000.

Ore., Salem—Tentative plans of the Klamath drainage district, whereby the district proposes to issue bonds in the sum of \$200,000 and develop ultimately 27,000 acres, were filed by J. C. Stevens, engineer for the district.

Utah, Goshen—Initial steps have been taken for the organization of a drainage district to reclaim 2,000 acres of land at Genola, near Goshen, in Utah county.

Wash., Spokane—Construction of the irrigation canal from Prosser Falls to Kennewick will be undertaken by the Kennewick Irrigation District at an early date. Funds for the immediate construction of the canal will be raised through a \$4,000,000 bond issue.

Power Projects

Colorado, Saguache—If the plans of the city council materialize, the Colorado Power Company will run a 16,000-volt line from Salida to this place which will provide 24-hour service.

Ore., Marshfield—It is reported that the Mountain States Power Company, with headquarters at Albany, is soon to build a transmission line to the town of Powers, which will cost \$25,000.

Utah, Logan—The construction of a large flume in Logan canyon, to cost approximately \$100,000, has been begun by the Phoenix Utility Company. The flume will replace the old one running from the dam of the Utah Power and Light Company to the power plant at the mouth of the canyon. It will be two miles in length.

Utah, Salt Lake City—The Mays-Gandy Company, 1022 Kearns Building, Salt Lake City has filed application with the state engineer for the use of 20 second-ft. of water from the Huntington River in Emery county, with which to develop 1,000 hp. for use in the company's mines in Emery. The water is to be used under a head of 208 ft., according to the application.

Power Plant Equipment

Cal., Merced—The Turlock Irrigation District will receive bids until 2 p.m. August 3 for the construction of approximately 28 miles of 66,000-volt transmission line. The material to be used includes about 200 steel towers, 170 miles of either copper or steel reinforced aluminum wire, 6,000 insulators, switchboards, lightning arresters, and oil circuit breakers.

Cal., San Francisco—Bids for supplying approximately \$135,000 worth of electrical equipment for the Moccasin Creek power plant on the Hetch Hetchy project will be received by the Board of Public Works until August 9. The equipment includes transformers and accessories and switchboards and accessories.

Wash., Tacoma—Bids for a one-story building for the city's new steam plant received by Ira S. Davisson, commissioner of light and power, showed J. E. Bonnell, Tacoma, low at \$22,993 for brick, and \$21,273 for concrete, and he was awarded the contract. Structure will be 113 x 60 ft.

Wash., Seattle—Board of Public Works has awarded contracts totaling \$36,304.87 for furnishing electrical apparatus for the Spokane Street sub-station, to four separate electrical jobbing concerns in Seattle, as follows: General Electric Company, \$13,588.27; Westinghouse Electric & Manufacturing Company, \$16,446; Eicher & Bratt, \$3,300; Garland-Afolter Engineering Co., \$2,970.

Wash., Seattle—In conjunction with the purchase of power and water systems of Montesano and Elma formerly operated by the Northwest Light and Power Company, the Washington Coast Utilities Company of Seattle will immediately begin the construction of a 12-mile transmission line from Grays Harbor to Elma. The work will also include the construction of a modern substation at the latter town.

Wash., Seattle—The Puget Sound Power and Light Company has begun the construction of a 110,000-volt transmission line from its hydro-electric plant near Easton to the Wenatchee Valley. It is estimated that the line will cost \$800,000. It will deliver 30,000 hp. to one of the richest agricultural districts in central Washington.

Railroads

Cal., Los Angeles—A tract of 516 acres south of Montebello and adjoining the city of Los Angeles on the east, has been purchased by the Union Pacific Railway Company. It will be used in developing one of the largest classification yards and shop centers in the West. This tract will be improved in conjunction with the 516-acre tract adjacent to Belvedere Gardens, acquired by the company several years ago. Several million dollars will be expended in the construction of tracks and buildings.

Cal., Santa Monica—Construction of a belt line from Santa Monica to the Palisades is being agitated by the Pacific Palisades Association and is said to have received the tentative approval of officials of the Pacific Electric Railway Company. It is proposed to extend the traction line north along the beach from the present terminal near the old Southern Pacific wharf to Temescal canyon, thence through the Palisades tract, returning to the city via Eighth Street on a viaduct over Santa Monica canyon.

Ore., St. Helens—The Deer Island Logging Co. is extending its logging railroad for about six miles so as to tap a fine body of timber which is back of Trenholm and on the Little Clatskanie River. There is close to 200,000,000 ft. in the tract which the company recently acquired and they will begin logging operations in that vicinity in eight or ten months.

Utah, Gunnison—Gunnison Valley has been practically assured of a branch line of the Denver & Rio Grande Western Railroad to tap the Westview and Clarion mining districts.

Utah, Delta—The Union Pacific Railroad has started the construction of a 35-mile branch through Millard county which will include the towns of Fillmore, Harding and McCormick. It will open up a rich farming country, much of which is devoted to sugar beets for the factory at this place.

Streets and Sewers

Ariz., Bisbee—Five hydrants and a high pressure water system are to be installed in the business district immediately for further increasing the fire protection facilities of the city.

Cal., Yuba—The city trustees have set August 8 as the date for voting on a \$50,000 bond issue for completely rebuilding the sanitary sewer system.

Cal., Healdsburg—Preliminary steps for the calling of an election for the purpose of voting \$10,000 for the extension of the present sewer system have been taken by the city trustees.

Cal., Venice—Plans are under way for the purchase of the entire ocean front from the Municipal Pier north to the city limits for use as a playground. Numerous street improvements, including the construction of a concrete promenade, are included in the plan.

Cal., Lakeport—Bonds to the extent of \$60,000 have been voted for the purpose of extending the city's water supply system. The issue includes an additional \$10,000 for the improvement of the sewer system. Plans and specifications are being prepared by the city engineer.

Utah, Ogden—Contract for paving the dugway road leading from Harrison Avenue to the mouth of Ogden canyon has been let to the Taylor-Child Construction Company for \$26,280.

Wash., Seattle—Contract for paving of Yale Avenue was let to R. G. Stevenson, 1327 North 34th Street, on a bid of \$61,191.

Wash., Port Angeles—The city council recently rejected bids received July 12 for contract to lay approximately 14,000 ft. of sewers at a cost of approximately \$35,000. The bids were too high. Pipe will vary from 6 to 21 inches in size.

Street Lighting Systems

Wash., Olympia—Contract for immediate installation of a boulevard lighting system in Olympia's downtown district has been awarded to the Post Electric Company of Olympia. The "Arcadian" pole and light will be installed.

Wash., Mountain View—Arrangements have been completed with representatives of the Stone & Webster interests which will bring electric lights to this city and surrounding farming territory. More than sixty farmers have signed for the service.

Wyo., Green River—The town of Green River is contemplating the installation of an ornamental street lighting system.

Waterworks

Ariz., Nogales—All bids for furnishing and laying the new gridiron system of city water mains have been rejected as too high and new bids ordered submitted. Specifications for the new bids are being prepared by City Engineer L. C. Kelsey.

Cal., Napa—August 15 is the date set for the \$600,000 bond election for purchasing the system of the Napa City Water Company and developing the Milliken Creek project. Of the \$600,000 to be voted, \$240,000 will be required for the purchase of the present system and \$360,000 for the development of Milliken Creek as an added source of water supply.

Cal., Delano—City water bonds to the extent of \$15,000 have been sold and work on extending the water mains will be started immediately.

Cal., Santa Cruz—The city council has decided on a site for the chlorination plant which is to be erected near the present reservoir for the purpose of purifying the water which is furnished the east side.

Calif., South Pasadena—South Pasadena has taken steps to initiate a project to provide an

adequate and dependable water supply for Pasadena, South Pasadena and Alhambra. A conference of officials of the three cities has been proposed to consider an agreement for the construction of an impounding reservoir on the West Fork of the San Gabriel River. The cost is estimated at \$1,000,000, half of which would be borne by Pasadena while the other half would be divided between South Pasadena and Alhambra. Despite the heavy rains of the last season replenishing the underground supply, South Pasadena has not sufficient water to meet mid-summer demands and Pasadena's present surplus of water is regarded as only temporary.

Cal., Santa Monica—Additional water supply for the Palisades district of Santa Monica is proposed by Wm. H. Carter, commissioner of public works, by the development of water-bearing lands near Sycamore Springs, Santa Monica canyon, on which the city has a ten-year lease. Water can be obtained there economically by drilling wells, and can be distributed by gravity.

Ore., Marshfield—A. B. Gidley of Marshfield, bidding \$29,380, secured the contract for the construction of the storage project and improvements to the water system at Coquille. Plans for the project were completed by Stevens & Koon, engineers, Portland. The work includes an earth and rock fill dam of 18,300 yards, 12 acres of clearing and grubbing, spillway wing, miscellaneous piping, valves and appurtenances.

Wash., Walla Walla—The Puget Sound Bridge & Dredging Company, on a bid of \$132,715.50, received the contract for Division No. 2 of the Walla Walla waterworks system. The contract involves the laying of four miles of pipe, construction of dirt road, and installation of telephone system. E. B. Hussey, civil engineer, Seattle, is engineer on the project.

Miscellaneous

Cal., Los Angeles—Piers—The Ross Construction Company was the low bidder for the erection of the concrete piers for the steel lift bridge to be erected over Cerritos Channel. The bid was \$262,000, or 20 per cent higher than the estimate presented to the city council by the city engineer's office.

Cal., Los Angeles—Wire—The Western Electric Company has been awarded a contract by the City Light Department for furnishing \$125,000 worth of power transmission line cable.

Cal., Sacramento—Gas Plant—The Pacific Gas and Electric Company is making improvements and additions to its gas plant here to the extent of \$100,000. The work includes the installation of two 250-hp. Stirling boilers and steam driven gas compressor with a capacity of 130,000 cu. ft. per hour.

Ore., Coquille—Dam—An election is to be held in the near future for the voting of \$50,000 in bonds for constructing a dam for increasing the city's water supply.

Ore., Portland—Pipe—The Willamette Iron and Steel Works has been awarded a contract for furnishing 9,000 tons of nine-ft. steel pipe to be used in the eight and a half mile pipe line which will carry water to the new plant of the Portland Railway, Light and Power Company at Cazadero.

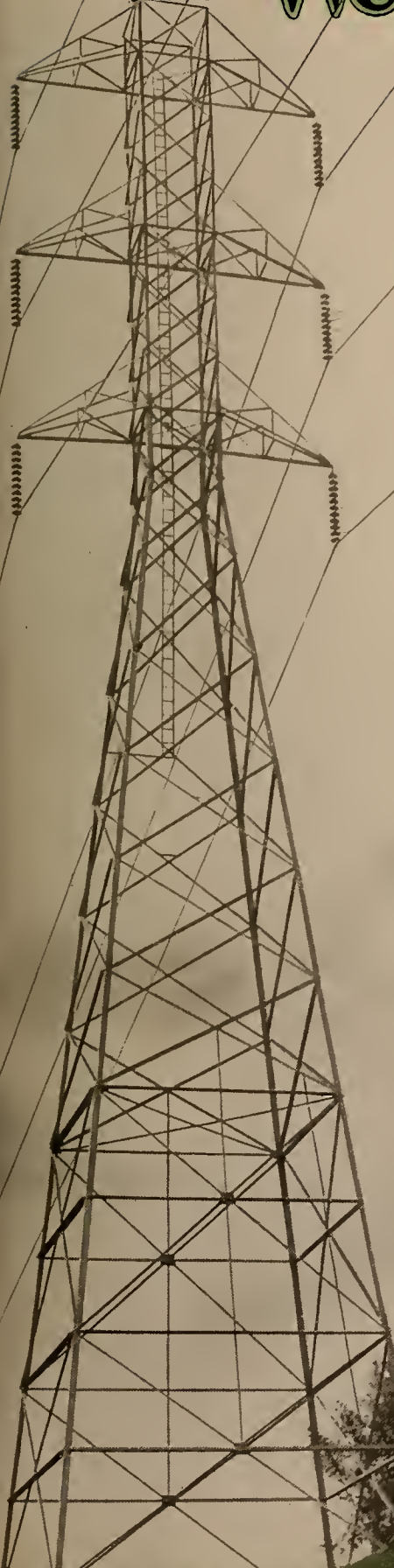
Wash., Seattle—Radio—The Kilbourne and Clark Manufacturing Company has been awarded the contract for reconditioning and remodeling 225 radio compass receivers for the Navy Department. This is the third large contract of this type received by the company during the last few months.

Wash., Chehalis—Mill—The Wasson Bros.' shingle mill near here was completely destroyed by fire, with a loss of \$50,000. It is reported that the plant will be rebuilt.

Journal of Electricity and Western Industry

August 15, 1922

San Francisco



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An excellent example of Domestic Load

FRANKLIN T. GRIFFITH, president of the Portland Railway Light and Power Company, made the statement in late 1921 that "the outlook for the electrical industry in Portland and vicinity is encouraging. The use of electrical energy is steadily increasing. The most marked increase in consumption during the past year and in immediate prospect, has been and will be in further development of the use of energy in the homes of the people."

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new Crawford Electric Ranges in this splendid new Portland apartment building. For that installation translated itself at once into a sharp upward trend and a steady new plateau in the domestic load curve.

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What the Pit River Development Means to the West

WITHIN the next sixty days Pit River No. 1 Plant of the Pacific Gas & Electric Company will have been placed upon the power system of California, bringing the total interconnected electrical energy up to nearly one and three-quarter million horsepower. This interconnected system in the West, of which the Pacific Gas and Electric system is one of the units, in vastness of distributing network involved, in voltages employed and in distances over which electrical energy is transmitted, embraces the greatest triumph in engineering attainment of this nature the world has thus far witnessed.

The active development in hydroelectric installation in this section of the West during the past two years has placed California beyond any other state in the Union, even surpassing New York, where Niagara is situated. Recent statistics show that over twenty per cent of the hydroelectric energy in the entire nation is consumed in California alone.

Mere figures mean little to the average citizen. An adequate appraisal of what this means can be obtained, however, from the following illustrations: Every time one horsepower in power plant development in the mountains is connected to any one of the giant transmission lines of the West, it means that twelve acres of unproductive land worth three hundred dollars will have applied to it four horsepower in motors for irrigation and general use, producing one thousand dollars in new crops per year, thus increasing the original value of the

land from three hundred to an average value of twenty-four hundred dollars. Again, to industry, it means an equally wonderful thing, for every time twenty-five horsepower is harnessed in the mountains, an average of a factory and a half starts up in one of the great cities of the West—involving a capital investment of almost one hundred and fifty thousand dollars. This sets in motion a hundred horsepower in motors, turning the wheels of industry and providing employment for from thirty-three to thirty-four more people and producing over two hundred thousand dollars in new commodities. Little wonder, then, that a population of ten million people for California in the present generation is being prophesied by students of industrial growth.

Hat Creek No. 1 and Hat Creek No. 2 of the Pit River development were put into service something over a year ago and are today distributing energy throughout Northern California to the extent of twenty-five to thirty thousand horsepower. In September Pit River No. 1 will deliver over ninety-three thousand horsepower of additional energy into the transmission lines of the West. Ultimately the Pit River development will total about six hundred thousand horsepower. There is no greater builder of agriculture and industry than these great water powers, economically and efficiently developed, and to those who have fearlessly pioneered in their financing and in their engineering, the earnest support of every loyal citizen of the West should be unreservedly given.

Competent Service to the Public —the Ultimate Destiny of the Industry

TRADEMARKS, and their value to industry as a symbol representing a standard of service, are the leading topic of discussion in electrical distribution centers. It is admitted that no industry can expect to achieve real success except on the basis of a constant improvement of service to the public.

A prominent western jobbing house in promulgating this idea, has blazed a trail which the industry as a whole may well follow. It has called public attention in no uncertain words to the excellent quality of power service in the western territory, and beyond that has shaken the industry out of its lethargy and spurred it on toward taking decisive action.

From the standpoint of the jobbing house itself, this movement has been a success. From the standpoint of the industry as a whole, it has also been a success in that it has aroused everybody to the need for establishing definite standards of service. Let us not be content to think that the ultimate solution has yet been reached. Leaders of thought in our industry should not rest until some flexible means has been evolved whereby the power and prestige of the entire electrical industry can collectively be put behind everyone who is willing and able to render honest and competent service to the public. This service must be all-embracing. It must include every phase of the electrical idea from the delivery of the current to the consumer, to the sale, installation and servicing of electrical apparatus and appliances to industry, the farm and the home.

Competing with the Government in the Merchandising Field

THE only project which has ever been put into operation which can be compared with that proposed to be erected in California under the Water and Power Act is the governmental organization in Ontario, Canada. The "Hydro Commission" of that province enters quite actively into the merchandising and servicing of all types of electrical appliances, and does an extensive contracting business.

A contractor-dealer in one of the many towns in which the "Commission" maintains stores "finds the Hydro Electric Commission very unfair opposition." He says "opposition and not competition, because the 'Commission' pays no taxes and what I call overhead, they don't seem to know the meaning of."

We know a California contractor-dealer who, because of a petty grievance against his local central station, declared his intention of voting for Amendment 19, the proposed Water and Power Act. Like many another voter, he could not see how the passage of the act would affect him. He looked upon it as simply another form of the popular pastime of "corporation baiting" and directed solely at the power companies.

When his attention was directed to the sections of the proposed act which provide that the board

created by the act may go into any business which they think necessary, he immediately saw a "dollars and cents" connection with his own pocket book and—changed his mind!

Two Years' Operation Under the Federal Water Power Act.

IN the two years of its existence, applications have been filed with the Federal Power Commission aggregating 20 million horsepower of proposed installations. This amount is more than twice the existing water power installation of the United States.

By the terms of the Federal Water Power Act the Federal Power Commission is required to investigate all projects as to design of structures and as to the proper utilization of the resources of streams. It is required to make valuations, investigate navigable status of streams, and to pass upon applications for restoration to entry of lands within power site reserves. It has many additional duties similar to those exercised by state public utility commissions.

To perform this task, Congress has given to the Commission no personnel other than its executive secretary, and the engineer officer. It has been operating for two years with a detail of eight engineers, two attorneys, two accountants, and eighteen clerks, borrowed from the Departments of War, Interior and Agriculture. Coupled with a totally inadequate appropriation this condition has had the effect of delaying action on many important subjects.

While the record of activities of the Commission during the past two years is commendable in view of the serious handicap under which the Commission is working, it should nevertheless promptly be placed in a position where it would be possible for it fully to carry out the policies plainly expressed in the law. Having waited ten long years for a legislative pronouncement of a Government policy respecting the utilization of our huge water power resources, we should not be required to wait another long period of years before means are provided for the execution of that policy. Instead of being obliged to drift along with an administration of the law which, under existing circumstances, is necessarily insufficiently coordinated and only partially effective, the obstacles should be cleared away, whatever their nature, and there should be substituted a positive attitude both of encouragement and of assistance in the development of our water powers.

Denver Cooperative League to Enlarge Activities

REVIEWING the accomplishments of the Electrical Cooperative League of Denver during its first year just ended, the advisory committee of that organization has decided to enlarge its activities on the basis of the good work done.

The advisory committee found, as a result of the League's activities:

"The establishment of a spirit of mutual helpfulness and understanding within the industry.

"A marked increase of interest on the part of the public in electrical matters, especially improved wiring plans and their resultant conveniences.

"A higher standard plane of operation for all the component branches of the electrical industry."

The program for the second year is ambitious and extensive. Of particular interest is the plan to extend the work of the League to such other territory outside of Denver as can be served profitably, and the enlargement of the staff to meet the new duties, and an increased appropriation.

At a time when other similar organizations of the West are being questioned as to their fitness to accomplish their purpose, it is gratifying to note the general satisfaction resulting from the work of the Denver League.

Uniform System of Accounting For Electric Utilities

THERE has long been a need in the states of the Pacific Northwest for a uniform system of accounting of electric utilities due to the interstate operation of many of these companies. In order to overcome difficulties which have arisen from this situation in the past, the Public Utilities Commission of Idaho recently changed its accounting methods. The system adopted was one prepared and recommended for adoption by state commissions, by the National Association of Railway and Utility Commissions in 1920. The proposed change does not go into effect until January 1, 1923, and provides for a hearing on October 15, at which time amendments and changes will be considered.

While certain proposed amendments, changes and alterations have since been made by the National Electric Light Association, in the original system proposed in 1920, the adoption of a uniform system of accounts is a step in the right direction.

Officials of the Federal Power Commission have been endeavoring for some time to induce utilities operating on lands and sites within the jurisdiction of that body to prepare uniform accounts. Much progress has been made in the general matter of uniform accounting during the past few years. It is to be hoped that local difficulties and objections can be eliminated, and that interested utility commissions will eventually agree upon a common system.

Use of Carbon Tetrachloride For Extinguishing Electrical Fires

CARBON tetrachloride is a standard fire extinguisher in general use and is approved by the National Board of Fire Underwriters. It is particularly adapted for fires produced by short circuits in electrical equipment and apparatus, because it is a non-conductor of electrical current and when properly applied in sufficient quantity will extinguish ordinary electric arcs.

Much public interest has been aroused in press statements to the effect that carbon tetrachloride extinguishers used on a subway fire in Newark, N. J.,

caused the formation of toxic gases, affecting the passengers and crew of the car.

A report recently submitted by an investigating committee of the Transit Commission, assisted by experts from the Bureau of Mines and electrical engineers, is reassuring to users of this type of extinguisher. The report states in effect that such injury as was suffered was caused mainly by gases resulting from the burning of insulating materials, rubber, varnish and paint.

The use of tetrachloride extinguishers, which had been temporarily discontinued pending the result of the investigation, was ordered to be resumed, the report stating that nothing had been discovered by the closest investigation to justify its discontinuance.

Sectional Problems Still to Be Considered

ALL Westerners who look to the future must feel a great sense of satisfaction over the growing spirit of nationalization in handling electrical problems. Men in the West have long since acquiesced gladly in deferring to national bodies in the consideration of all problems that have a national background.

It must not be forgotten, however, that even in these national problems, there are certain regional or sectional angles that must be taken into consideration. For illustration, reference is made to the activities of the Commercial Section of the National Electric Light Association. In the recent discussions of the National Electric Light Association at Atlantic City, eastern representatives could not see how rural extensions could in any manner have a bearing on the activities of the Commercial Committee. In the West we know this, of course, to be one of the pivotal points upon which a great part of future commercial activities must depend.

It would be well for the national officers in appointing the committees for the next year to bear this point in mind and in the most aggravated instances there should be sub-committees of the main section for considering with particular stress such regional problems as would seem best for emphasis in the general report of the national committee.

RADIO BULLETINS

The Journal of Electricity and Western Industry broadcasts a special industrial and business news report each Monday night at 7:30 o'clock, both from San Francisco and Portland. The San Francisco report is broadcasted from station KLP, operated by the Colin B. Kennedy Company at Los Altos, California. The Portland report is sent out by the Northwestern Radio Manufacturing Company from station 7XF. Both reports are broadcasted on a wave length of 360 meters.

Western Comment on Current Events

Editorial Notes and Readers' Views on the Outstanding Aspects of Financing, Trade Promotion, Legislative and Associated Topics that have a Special Bearing on Western Business

The final decision in the matter of the joint control and operation of the Southern Pacific and Central Pacific railroads has again been put up to the United States Supreme Court in a brief filed by attorneys of the former company asking for a rehearing of the case. In the appeal to the court the counsel for the defendants set forth that an order requiring the Southern Pacific Company to divest itself of ownership and control of the Central Pacific Railway would give retroactive effect to the Sherman anti-trust law and create a new and untried condition in the management of the two roads.

"If the present properties were disintegrated after fifty years of unified and uninterrupted operation," the brief said, "the effect would be to create two managements where there has been but one since the origin of the properties, and also to create a new and untried condition which has no prototype. "It would be the irony of fate," the brief continued, "if it should turn out that the unified control of Stanford and his associates were destroyed, by their stock sales" (referring to the transfer of Central Pacific stock, mostly to foreign investors) "and then find that the restoration of this unified control by repurchase of the stock was illegal."

Opinion in various sections of the West regarding the division of the two systems is divided and the parties interested are making a vigorous campaign to win public support. Needless to say, the final decision of the Supreme Court in the matter is awaited with a great deal of interest.

Two recent reductions in the price of crude oil announced by various companies have had a reactionary effect which has not been confined to the oil industry alone. Of chief importance is the announcement by the California State Railroad Commission of two cuts in the price of gas to the consumer. This action was taken following an agreement with the various public utilities that gas rates were to be decreased in keeping with any reductions in the price of crude oil.

The effect in the oil fields has been marked by the closing down of a number of wells which no longer can be operated at a profit with crude oil at its present price, namely, 60 cents a barrel. It is interesting to note that prices are the lowest they have been since July, 1916, when low gravity crude was selling for 58 cents a barrel. The peak in the wave of high prices was reached in July, 1920, when one of the largest companies was offering \$1.60 per barrel.

Despite the wave of pessimism among operators which followed the reduction in prices, there has

been little slackening in the number of new wells which are being started. Twenty-seven wells were started during the week of July 30 and several large producers brought in during that period.

The relation of the cut in price to oil stocks has been commented on by one of the financial writers in a large western daily in a noteworthy fashion. This writer says:

The margin of profit in oil has been, of course, immense, but whether it is large enough to stand the great waste that present conditions seem to indicate is doubtful. For some little time past the sales of gasoline and lubricating oils appear to have been carrying the larger part of the burden of the business, and these products represent much less than half of the crude output. If the other part of the crude, more than half of the output, cannot be effectively distributed, both the oil producers and refiners will certainly come to the time when they must revamp their estimates of profit.

That the stability of a community is measured not only by the number of its home dwellers but also by the number of its home dwelling owners, is the contention of the Department of Industries of the Portland Chamber of Commerce in a bulletin which has just been issued on the subject of home ownership. An exhaustive study has been made of the 1920 census figures and some interesting facts have been brought to light, especially regarding the standing of the various communities of the West in the matter of home ownership.

The Chamber of Commerce's compilation shows that four western cities rank among the first five in the number of persons per dwelling in cities having a population of over 100,000. The following table shows the relative positions of several western communities.

City	Ranking	No. of Dwellings	Population	Persons per Dwelling
Oakland	2	47,297	216,261	4.6
Los Angeles	3	125,004	576,673	4.6
Portland	4	54,664	258,288	4.7
Spokane	5	22,389	104,437	4.7
Salt Lake City.....	11	23,685	118,110	5.0
Seattle	15	60,516	315,312	5.2
San Francisco	21	90,132	506,676	5.6

While none of the western cities rank as highly in the percentage of homes owned, as the following table shows, the recent large increase in home building would doubtless increase the ranking of many of the cities.

City	Ranking	Percentage of Homes Owned
Seattle	9	46.3
Portland	12	44.6
Spokane	13	44.6
Salt Lake City.....	14	44.3
Oakland	16	42.0
Los Angeles	24	34.7
San Francisco	29	27.4

In commenting upon the figures, the Chamber of Commerce bulletin says:

It would appear that the most important thing to know is the ratio of home dwellers (in purchased and rented homes) to the total population. Then, to further indicate the stability of citizenship, show what percentage of these dwellings are owned and what percentage are rented, and lastly show to what extent the purchased homes are free from encumbrance.

If the home ownership figures are used (as is usually the case) without a statement of the relationship of home dwellers to total population, the study is worthless.

The Supreme Court of the State of Wisconsin has recently handed down an important decision involving the Wisconsin Railroad Commission, the city of

**Wisconsin Ruling
Important to
Public Utilities**

Eau Claire and the Wisconsin-Minnesota Light and Power Company, which promises to have an important bearing on the entire nation's system of utility rate

fixing. In 1914, the aforementioned utility absorbed the system of the Chippewa Valley Light and Power Company, which was generating and furnishing power to a number of small municipalities in Wisconsin and Minnesota. The larger company, to insure a sufficient supply of power to meet its growing demands, shortly thereafter entered into a contract with the predecessor of the present Northern States Power Company to purchase a large block of power from the Wissota project, then under construction. The price to be paid for this power was based upon a cost of \$3,000,000 for the project. However, approximately \$7,000,000 was spent on the development and the rates in the original contract were revised to meet the new conditions.

The Wisconsin-Minnesota Light and Power Company immediately started a campaign to secure more consumers. A so-called loop system was constructed to which all of the cities on the lines were connected and new districts added from time to time.

In fixing rates, the Wisconsin Railroad Commission treated the loop as a unit. The cities were divided into classes, as were the consumers. The city of La Crosse, situated at least 100 miles from the Wissota dam, was given the same rates as Eau Claire, located in close proximity thereto. The commission estimated that the plants originally supplying the loop were unable to supply the demand for power owing to the additional load and that the entire output of these plants together with 71.68 per cent of the output from Wissota was needed to meet this demand. Consequently in fixing the rates 71.68 per cent of the cost of the dam was apportioned to the loop system.

In the lower court the appealing municipalities complained of this allocation and strenuously maintained that the commission had no right to regard the loop as an entity in fixing just and reasonable rates for service. The lower court, however, held that the action of the commission was lawful. It held, none the less, that an unreasonable proportion of the cost of the Wissota dam was apportioned to the loop and for that reason reversed the order of the commission. From the judgment so entered the Wisconsin-Minnesota Light and Power Company appealed.

In its decision affirming the judging of the lower court the Supreme Court of Wisconsin de-

clared that it was deeply impressed with the thought that the fundamental basis upon which the commission proceeded in fixing the rates, and of which the plaintiff cities complained, results in a great injustice to those cities originally served by the Chippewa Valley Light and Power Company. As a result of the basis adopted by the commission those cities are now charged a higher rate to enable cities later brought into the loop to enjoy service at a lower rate than that at which they otherwise could be served.

The Wissota dam, the court says, would never have been built originally for the service of the Wisconsin municipalities. Its construction was prompted by the contract with the Northern States Power Company, and had that contract proved unprofitable it safely may be assumed that the utility would not have sought the market afforded by the various cities and villages which it added to the original loop system. The latter development, the court holds, was not economical, and by treating the loop system as a unit the cities originally furnished by the prior developments are now called upon to bear the burden necessary to yield a reasonable return upon approximately 70 per cent of the cost of constructing the Wissota dam.

There was no contention that the rates fixed yielded an unreasonable return to the utility. The complaint is that the return to, or income of, the utility resulting from the rates fixed by the order of the commission is unlawfully and unreasonably distributed among the municipalities constituting the so-called loop system. The question, therefore, before the court was whether the commission was acting within the legislative provisions in treating the loop system as a unit for the purpose of fixing the rates to be charged by the Wisconsin-Minnesota Light and Power Company to its consumers.

The decision of the court concluded with the following statement:

"Under existing statutes the commission is required to treat the municipality as a unit and to base its rates upon the cost to the utility of serving the individual municipality rather than the average cost of serving many distinct and scattered municipalities. Because the commission in fixing the rates under review treated the loop system rather than the individual municipality as the unit, it proceeded upon an erroneous fundamental basis and its order must be vacated and set aside."

Two of the judges sitting upon the case handed in a dissenting opinion, holding that nowhere in the public utility law is there evident any intention that such a utility be dealt with in fragments or be limited in its service to one municipality.

It is evident that the ruling of the court has robbed the Wisconsin Railroad Commission of its full rate-making powers and has, moreover, set up a new principle in rate making based upon the location or proximity of communities to the generating station. Under the ruling it would seem that every town must have a rate of its own. That this would retard water power development and have a restraining effect upon transmission companies and interconnected systems is apparent, should that principle be accepted in other courts.

Letters to the Editor

Seattle Electric Club Effective Medium For Promoting Electrical Idea

To the Editor:

Sir: The organization now known as The Electric Club of Seattle is the final stage of a series of organizations originating in the Electrical Contractors' Association, all of the preceding organizations having gone out of existence.

The present Electric Club was formally organized about eight months ago and has shown a steady if not rapid growth. However, on account of its success up to this time, it is confidently felt that its growth will be more rapid from now on.

Unlike previous electrical organizations here, which have limited their membership to some particular branch of the industry, the present one embraces all lines, and we now have representatives from all the jobbers and power companies as well as from the dealers, manufacturers, contractors, etc.

It is the aim of the club to handle the problems of the various branches through committees representing them. Thus we have a "Contractors' Affairs" committee, a "Dealers' Affairs" committee, and so on, in addition to such general committees as the "Legislative," which handle all legislative matters affecting the organization or its members, and the "Electrical Home" committee which handles the details of staging the electrical homes shows. Two of these homes are now under construction, one in the north end and other in the south end of the city, and are expected to be opened to the public about September first.

Another important general committee is one known as the "Recreation" committee. This one handles all social affairs of the club and recently arranged a very successful picnic. It was estimated that about five hundred Seattle electrical men and their families attended this affair, and at the invitation of the committee Tacoma sent about fifty more. A certain amount of social contact between the members and their families seems to be desirable, if not a necessity, and the Recreation committee has now become an important institution with us.

Perhaps the most important committee of all is the one charged with furnishing the speaker for the weekly luncheons. At least one speaker is expected to be in attendance at these luncheons who, after the transaction of the regular business and receipt of committee reports, is given the balance of the period to speak upon any topic he may choose. Usually the topic chosen is one foreign to the electrical business, but is no less welcome on that account. In fact, it seems to be pretty generally agreed that a subject unrelated to our every-day business is preferred.

This committee's work is by no means easy, as speakers frequently fail them at the last moment and a substitute has to be found, but this they usually manage to do somehow.

Reflection upon the activities of the club for the past few months convinces the officers that this organization is a decided success and the opportunities for furthering its usefulness in the future are many. With this in mind the membership committee is now making its plans for a more active campaign for members, which it will institute as soon as the vacation period is over.

Obviously, the nearer the organization comes to including all those actively engaged in the electrical industry in its various branches, the more useful it can be made for all.

J. J. AGUTTER, Pres.

Seattle, Wash.

Seattle Electric Club.

Influx of German Made Irons Creates Fire Hazard by Faulty Construction

To the Editor:

Sir: I think the following paragraphs from the publication "Safeguarding America Against Fire," issued by the National Board of Fire Underwriters, is of sufficient interest to your readers to give it publicity through your columns.

"In violation of all tradition concerning the post-bellum beating of swords into plowshares, German effort in this regard seems to have been directed in part to the turning out of electric pressing irons. Once again, in this product, the vaunted Teutonic thoroughness is displayed, for these irons are most thoroughly defective. And, moreover, they have descended upon our shores in a veritable avalanche. A shipment of 180,000 of these cheap appliances—fire breeders, in all truth—was recently unloaded at the port of New York.

These German irons retail at one dollar but are not accompanied by stands. This introduces an additional hazard, although it is the irons themselves that present the chief danger. They are flimsily constructed and, since their period of service is extremely brief, they are expensive at any price. The flexible cord attached to them is of sub-standard, No. 32 gage, whereas No. 18 is prescribed by underwriters as a minimum requirement. Furthermore, the insulation is inferior and will not stand much usage. The plug is of a wooden type long ago discarded in the United States.

"An engineer who tested four of these irons found that not a single one lasted long enough to undergo the complete tests which it was planned to carry out, the heating element breaking down in from three to thirty-five minutes. In the interior of the iron, the mica insulation was in small pieces and insufficient to prevent contact with some part of the appliance.

"In two of the irons, short circuits immediately occurred, due to the poor assembly. Such construction is sure to result in the blowing of fuses on the circuit employed. Also, owing to the scant insulation, there is considerable likelihood of shock when the irons are employed in the neighborhood of plumbing fixtures.

"Potential fire hazards—arising, indeed, not from poor construction, but from careless or ignorant use—already exist in abundance with the best of American-made irons. There is no room in this country for irons which are inherently dangerous, even when properly employed.

"News of these foreign visitors has been sent broadcast, and it would seem, in the circumstances, that the electrical industry might sharpen its publicity weapons and launch an attack upon this Teutonic intruder. The sale of this defective appliance cannot but create an undesirable impression in the public mind that may affect the popularity of approved American irons. To the average purchaser all irons look alike."

D. E. HARRIS,

San Francisco.
V. P. and Sales Manager,
Pacific States Electric Co.

Accurate Knowledge Needed Before Electric Heating Is Installed in Home

To the Editor:

Sir: Your editorial in the July 15th issue, subject "Need for More Attention to Electric Heating," performs a valuable duty, namely—getting the haphazard electrical dealer, and even an electrical engineer, to think and analyze the case at hand, before advocating electric heating.

The "cause" is most frequently injured by the engineer supplying electric heating which proves unsatisfactory, due to undercapacity of heaters, or overly expensive monthly power bills. Both objections are injurious. The case of installation of heaters having insufficient capacity, is usually a case where the electrical man responsible has endeavored to keep down the power bill, but has overlooked the fact that his client will freeze.

In laying out a heating job, not only must we go over the plans of the home, usual outside temperature, etc., but

must talk with the client, and learn if he intends to keep the whole building heated, or just so many rooms—in short, really get all the facts and tell him honestly what it will cost him to heat his home.

If your estimate of monthly cost meets your client's pocket book—you have made a satisfied customer and an advocate of electrical heating.

If the monthly cost of operation is more than he can pay, it is timely either to discourage him from electric heating, or have him modify his heating requirements.

We are glad to see the "Journal" writing editorials of this nature. Articles such as this will stop many a misapplication of electric heating. Keep up the good work.

ELBERT KRAMER,
Supply Division,

Westinghouse Electric and Manufacturing Co.
San Francisco.

Commends Article on Improving Efficiency of Personnel Relations in Industry

To the Editor:

I have certainly enjoyed the article by Mr. J. David Houser appearing on page 47 of your July fifteenth issue, and would appreciate it if you would convey to him my congratulations on the able way that he has handled this most important and most difficult subject.

I am particularly impressed with his paragraph on "reporting downwards." It is just such practical suggestions that we need and less of the complicated, idealistic theories that fail to work out in practice.

I always find something of particular interest in every issue of the "Journal."

W. H. CRAWFORD.

Portland, Oregon.

Possibilities of Electric Heating Advocated by Western Manufacturer

To the Editor:

Sir: Your editorials on electric heating in the July 1 and July 15 issues are noted, and the rapidly rising interest in this branch of the industry and its potentialities for central station, jobber, and contractor, are highly pleasing to us.

We have a criticism of the editorials to offer which you will no doubt be glad to know, for it is constructive in character and permits the broadcasting of news of electric heating development in an even more favorable light than you have shown it and it has been the subject of some comment that the thought was not developed in your editorials.

Reflected heat, or as it is coming to be popularly known, "flood heat," adds an element of efficiency to the ordinary electric heater which merely gives off heat from the coils, and the efficiency of which must be gauged by the amount of current consumed. The element of efficiency referred to is the reflecting of the heat into the room, or flooding the room with heat, and the result is just as instantaneous after turning on the current as the result from an electric light is after turning on the current, and just as there are other elements than current consumption to the efficiency of an electric light, there are other elements to the efficiency of an electric heater.

For instance, a group of people may gather in a room for a short period and have the room flooded with heat upon turning the switch. Assume that the room is a dining room, or a bed room, or even a living room, and that the period during which the heat is wanted is comparatively short—say an hour. A Majestic Heater of 2,000 watts will amply flood

the room with heat immediately, whereas a heater of considerably larger wattage would be needed in order to give even a belated warmth to the air, or else it would have to be turned on some time in advance. The popularity of Majestic Heaters in lodge rooms and such places where there is definite expense connected with the earlier turning on of the heat, is suggestive of the advantage mentioned just above.

There is almost no type of building that we are not heating with pleasure to the owners. The installations include residences, apartment houses, hotels, summer resorts, hospitals, dance halls, offices, theaters, battleships and passenger ships.

You will no doubt be proud to mention Majestic Heating, for it is a logical development of world-wide fame and importance, and its progress and future are unlimited.

T. D. MACMULLEN, Secretary,
San Francisco Majestic Electric Development Co.

Endorses Editorial on Electric Heating in July Fifteenth Issue

To the Editor:

Sir: I want to endorse what you said in the editorial appearing in the "Journal" of July 15 on Electric Heating. It is right to the point and certainly timely.

If it is possible that electrical men take seriously the sales arguments about "fat watts," "trained watts" and "directed watts" they should reflect that a watt is a "unit of electrical power or rate of working equal to 1/746 of one horsepower" and not a flexible quantity.

Failure in the past to install heaters of proper capacity may be excused on the ground that rates were so high that electric heaters were usually only practicable for auxiliary heating. But today with reasonable electric rates general heating is becoming popular and is most satisfactory where, as you say, due care is used in designing the system, installing it and operating it. That certainly means sufficient wattage in our climate to take care of a temperature difference of at least 30 degrees F.

W. WESLEY HICKS.

San Francisco.

Suggestion Is Made that More Attention Be Given to Electric Building Heating

To the Editor:

Sir: In looking over the "Journal" of July 15 I was particularly interested in your editorial headed "Need for More Attention to Electric Heating." It seems to me that this is very well written and emphasizes the facts with considerable force.

Apparently there has been very little attention given to electric building heating, but on account of the favorable conditions existing in California, I am convinced and have been for a number of years, that there are possibilities in this line beyond the comprehension of the average person and I believe that the next few years will prove that this field is practically unlimited, but in order to have satisfactory results it is, as stated in this article, necessary to correctly determine the amount of heat required before making the installation. If heaters of too small capacity are installed, it will be impossible to satisfy the users, but all installations that have come to my notice which were properly estimated and installed have been completely successful. I would be very pleased to see more attention given to electrical building heating in the future.

A. STRAUCH,
San Francisco Pacific Gas and Electric Company.

Builders of the West

A SOUND financial idea which brings about cooperation between a public utility company and its customers and furnishes capital for continued improvement in that utility is a noteworthy discovery. Therefore when August F. Hockenbeamer, vice-president and treasurer of the Pacific Gas and Electric Company, in 1914 conceived the idea of the direct sale of public utility securities to consumers and employees, he was building history in the financial and economic world.

Mr. Hockenbeamer's whole experience was an unconscious preparation for such an important discovery. He was born and brought up in Logansport, Indiana, a railroad town of importance. After a public school and business college education he went to work in the Logansport office of L. F. Loree, division engineer for the Pennsylvania Lines. Here he began at the bottom of the ladder as messenger and office boy. In six months he was promoted to the position of stenographer and from that time he advanced steadily to increasingly important places until, at the age of thirty-one, he was chief clerk to the division superintendent at Richmond, Indiana. He then became assistant engineer of maintenance of way for the Baltimore and Ohio railroad, after which he was made assistant general superintendent of motive power of the same road. It is to be noted that all these positions bore upon the financing and economic aspect of the railroad business. His next step was to go to New York City as assistant to Mr. Loree, now the president of the Rock Island-Frisco system. But he was not to remain long in this position. The great banking concern of N. W. Halsey and Company, recognizing his sound financial judgment, made him their expert on railway investments and corporate properties. He continued with Halsey and Company for five years, finally coming to San Francisco in 1907 as their agent. He came to stay six months. He has remained fifteen years. The Pacific Gas and Electric Company also saw the keen business judgment of Halsey's expert and made him such a tempting offer that he remained in the West where he has become a notable financial figure.



AUGUST F. HOCKENBEAMER

Railroad official, business executive and financial expert, whose clear judgment has wrought a business policy of signal importance to the progress of the West.

It was in 1914, just prior to the World War and after Mr. Hockenbeamer had added the positions of second vice-president and treasurer to that of comptroller of the Pacific Gas and Electric Company that he worked out the policy of selling public utility stock to customers. Up to this time the progressive activity of the Pacific Gas and Electric Company could be financed easily by the mortgage system. But there is a limit to borrowing on this basis. And there is no mechanism for the adequate distribution of stocks comparable to the machinery for distributing bonds. Yet under the law of the land such a utility as the Pacific Gas and Electric Company must operate. It cannot refuse to serve new customers. Its activities must penetrate farther and farther into virgin territory. In order to do this it must have new capital. Mr. Hockenbeamer saw that if he

could make shareholders of the consumers of the company it would bring about a fine sense of cooperation between the utility and the public. It would also solve the financial problem. But it took the public almost two years to see what had presented itself so clearly to Mr. Hockenbeamer. In the meantime he tested his plan in a small way in the California Telephone and Light Company which he had organized in 1913. It proved a success. The Pacific Gas and Electric Company also found it a device of unparalleled success. During the year 1914 this company sold \$8,801,000 worth of preferred stock. From that time to July, 1922, a total of \$30,278,300 worth of these securities were disposed of direct to 21,342 individuals. On the payment of the 31st consecutive dividend in May, 1922, first preferred stockholders had received dividends totaling over \$11,000,000. An important point is that of the 49,036 investors in the company's securities 32,622 reside in California.

To August F. Hockenbeamer, then, because of his working out of a financial policy which is bringing about a healthier and more harmonious relationship between groups of society in this country, is this number of the Journal of Electricity and Western Industry affectionately dedicated.



Lower Hat Creek Falls near Hat Creek No. 2 Development

Insuring California's Industrial and Agricultural Growth

How the Pacific Gas and Electric Company is Spending Eight Million Dollars Yearly to Meet Power Demands by Developing 600,000 Horsepower From Seven Projects on the Pit River

By NORMAN S. GALLISON



Standard 220-000-volt transmission tower

AMPLE power is the first requirement of an industrial structure. Power is the magic medium that transforms raw materials into usable products, that turns the wheels of transportation, transforms the desert into the garden and builds great manufacturing cities. California has a bounteous treasure of raw materials, millions of acres of cultivable land, and countless thousands of people are ready to flock into that state as soon as sufficient power is developed to give them occupation.

The only available source of power which will provide for this future growth lies in the development of hydroelectric energy. California possesses about fifteen per cent of the total possible hydroelectric power in the entire country. Only about one million and a quarter out of a possible nine million horsepower have been made available. Although but one-seventh of this has been developed, many of the remaining sites are difficult of access and distant from possible markets. Huge storage dams are often necessary, and flumes, tunnels and transmission lines must be built in rugged mountainous country at great expense. Despite this, in order that the inevitable growth of the state may not be retarded, its power companies are plan-

ning the development of a million and three-quarters additional horsepower within the next ten years at a cost of six hundred million dollars.

The Pacific Gas and Electric Company, the second largest public utility in the world in gross business involved and the largest in size of territory served, is doing its share in promoting the inevitable economic growth of the state. This company already serves over one-half of the population of the state, from twenty-eight hydroelectric plants which produce over three hundred thousand horsepower. To provide for future demands, this company undertook the task of harnessing the Pit River in June, 1920. This river, 250 miles north of the San Francisco bay region, the principal power market, drains the four counties in the northeastern corner of the state, Siskiyou, Shasta, Lassen and Modoc. The ultimate development embraces a chain of seven power plants with a contemplated capacity of 600,000 hp. at an expenditure of ninety million dollars.

Unusual progress has been made since the inception of this plan. Two plants on Hat Creek, a tributary to Pit River, have been in operation almost a year, and with the opening in September of Pit No. 1 power plant, the first large link in the chain will have been forged.

The Pit River is unlike other California streams in that no storage reservoirs are required. The river drains a basin of 5,906 square miles consisting of mountainous areas, plateaus and porous lava beds, at an average elevation of 3,000 ft. The annual precipitation ranges from a minimum of 14 in. in the plateau regions to a maximum of 60 in. in the mountainous areas. The lava beds constitute an underground reservoir and the flow of the river varies but

slightly throughout the year, having an average run-off of 5,108,000 acre-feet. This natural regulation is remarkable in that it does not occur elsewhere in California.

Region Is Geological Curiosity

Geological records indicate that the unusual



Built upon a foundation of native stone the rustic clubhouse, center of social activity on the Pit River Development, has a beautiful setting beneath large pine and oak trees.

water conditions are a result of volcanic action. The Cascade range, of which Mt. Shasta and Mt. Lassen are outstanding peaks, at one time formed a dam across what was formerly an extension of the Sacramento Valley. Much of the drainage basin of the Pit River is composed of lava table lands built up by volcanic eruptions from the surrounding mountains. The Pit River has torn a chasm through the volcanic range and drains into the Sacramento. A large portion of the area drained consists of alternating and irregular areas of lava and sandy meadows, extending northward into Oregon and are a desolate waste. The rainfall in this region, which was once a gigantic lake, does not run off but sinks into the porous lava, coming to the surface in the form of giant springs when it meets impenetrable clay beds in the Fall River and surrounding valleys.

The Pit River itself is a moderate stream until its juncture with the Fall River. Hat Creek and Burney Creek and other tributaries which rise in numerous springs in the lava beds, swell its volume until it approaches a minimum flow of 2,500 sec.-ft. at the last proposed diversion point above Big Bend. The river falls 2,104 ft. in a distance of 60 miles and engineers have estimated that 600,000 hp. is capable of being developed, or about three billion kilowatt-hours per year of additional energy. Increase in demand for electrical energy on its system of over 100 per cent from 1911 to 1920 convinced the Pacific Gas and Electric Company that this addition, twice the present kilowatt-hour output, will be needed in the next ten years. Hence, to insure sufficient future production, transmission and distribution facilities to meet this demand, the development of the Pit River was undertaken.

Before the proposed development could proceed it was necessary to purchase the properties of the Mt. Shasta Power Corporation, the California Power and Manufacturing Company, and certain water

rights and claims of various individuals and concerns. To provide for what appeared to be a power shortage in 1917, it was decided to construct two preliminary plants on Hat Creek, not far from its juncture with the Pit. Next Pit No. 1 plant, which draws its water from Fall River, and then a chain of four power houses on the Pit River itself ending with Pit No. 5 at Big Bend.

Construction Begun in 1920

Construction on the two Hat Creek plants was begun in June, 1920, and continued under adverse climatic conditions throughout the winter of 1920-21, being completed in September, 1921. Hat Creek, which has a volume of 600 sec.-ft. at its juncture with the Pit, flows northward from the slopes of Mt. Lassen. It has numerous tributaries which emerge from the lava beds in the form of giant springs and has a fall of about 400 ft. in a few miles.

In the Hat Creek No. 1 development water is diverted by means of a rock filled timber crib dam, about 8 ft. high and 200 ft. in length, into a 2,750-ft. ditch terminating in a small forebay. The water enters the power house through a penstock 1,600 ft. long under a head of 217 ft. The power house is a steel frame reinforced concrete structure equipped

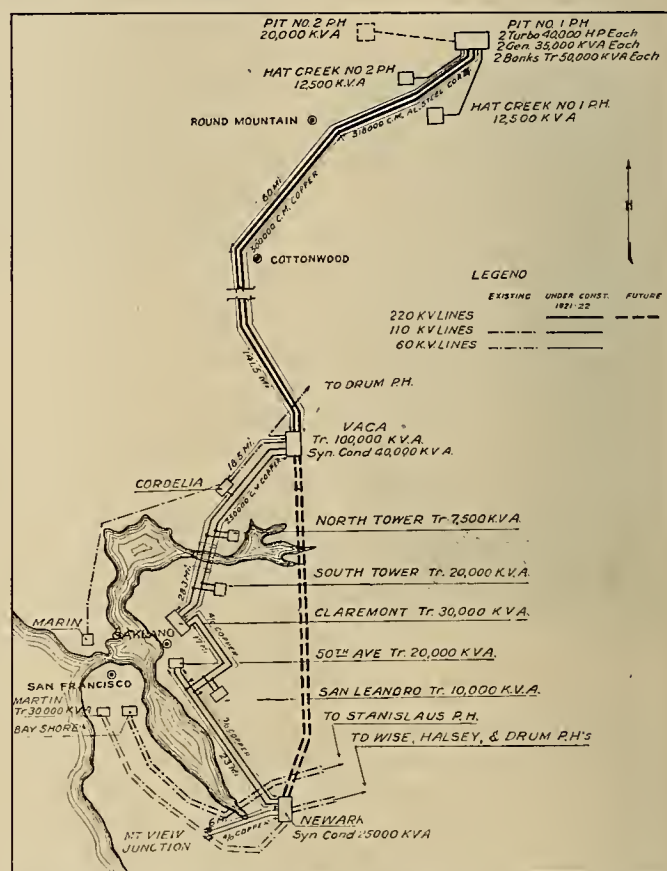


Chart of the Pit River transmission system. Note that the chart has been condensed and approximately 100 miles of line from Cottonwood to Vaca have been omitted.

with a 15,000-hp. vertical turbine direct connected to a 12,500-kva. generator. Power is transmitted at 6,000 volts to Hat Creek No. 2 without transformation.

Water for Hat Creek No. 2 plant is diverted just below Hat Creek No. 1 power house by means of a

similar dam about 300 ft. long, extending diagonally across the creek. From the diversion point to the head of the penstock, a timber flume has been built terminating in a concrete lined forebay. The penstock is 8 ft. in diameter at the turbine and 400 ft. in length. The effective head is 196 ft. Power equipment is identical with Hat Creek No. 1, but owing to additions to the flow from Crystal Lake more power is being obtained. Energy from this plant, supplemented by that from Hat Creek No. 1, is stepped up to 60,000 volts and transmitted to Cottonwood. The transformer equipment consists of four 8,000-kva. water cooled transformers wound to operate at 63,500 or 110,000 volts.

Pit No. 1 Is First Large Unit of Project

In the Pit River No. 1 development, Fall River is diverted by a low concrete structure 600 ft. in length. This stream, which contributes 1800 sec.-ft. at the diversion point near its juncture with the Pit, rises in the Modoc lava beds to the north. Water is conducted from the diversion dam through a canal sufficient to carry the entire flow of the river to a pressure tunnel 10,160 ft. in length. The tunnel is a horseshoe section for a considerable part of its length. The remainder is circular section. The tunnel is concrete lined and the horseshoe section is approximately 16 ft. high with a bottom width of 13 ft. The tunnel is built on a three per cent gradient and has a fall of about 30 ft. from portal to portal. The tunnel discharges into a circular surge chamber, 55 ft. high and 60 ft. in diameter, from which two penstocks, 1,400 ft. long and tapering from 11 to 9 ft. in diameter, lead to the power house. The effective head is 418 ft.

A handsome reinforced concrete and structural steel building of striking Gothic design, the power house of the Pit No. 1 development is a monument in itself. It is located on a bench above the river, necessitating the construction of a tailrace of 1,200 ft. It contains two vertical turbine units, direct connected to generators of 35,000-kw. capacity each, making the total installation 70,000 kw., equivalent to 93,300 hp. The low tension switching apparatus is located in a rear wing, with the transformers and high tension switching equipment outdoors. The transformers, seven in number, of 16,667-kva. capacity, are connected in two banks of three each, one being used as a spare.

Power generated at 11,000 volts, supplemented by that from the two Hat Creek plants, will be stepped up to 110,000 volts temporarily. Later it will be raised to 175,000 volts and eventually to 220,000 volts. This will be a world's record, and is expected to be accomplished in 1923 and all transformers, insulators and line construction have been erected in preparation for it. From Pit No. 1 the transmission system consists of two lines on separate towers below the snow line to Cottonwood, a distance of 60 mi. by one line and 70 mi. by the other. From this point the line consists of single towers carrying both circuits. The line then extends 142 miles south to Vaca substation, where step-down transformers, and synchronous condensers for line

regulation, are installed. From this point the present plans call for an extension of the 220,000-v. line to Newark in Alameda county, where identical equipment will be installed. Until the development of Pit River No. 3, power will be brought to the bay cities



Hat Creek No. 1 power house viewed from the penstock line. This plant is situated about two miles below the town of Cassel. This plant with an installed capacity of 15,000 hp. has been in operation almost a year.

by way of Carquinez Crossing, which has been reconstructed for 110,000-volt operation.

Four Large Plants Below Pit One

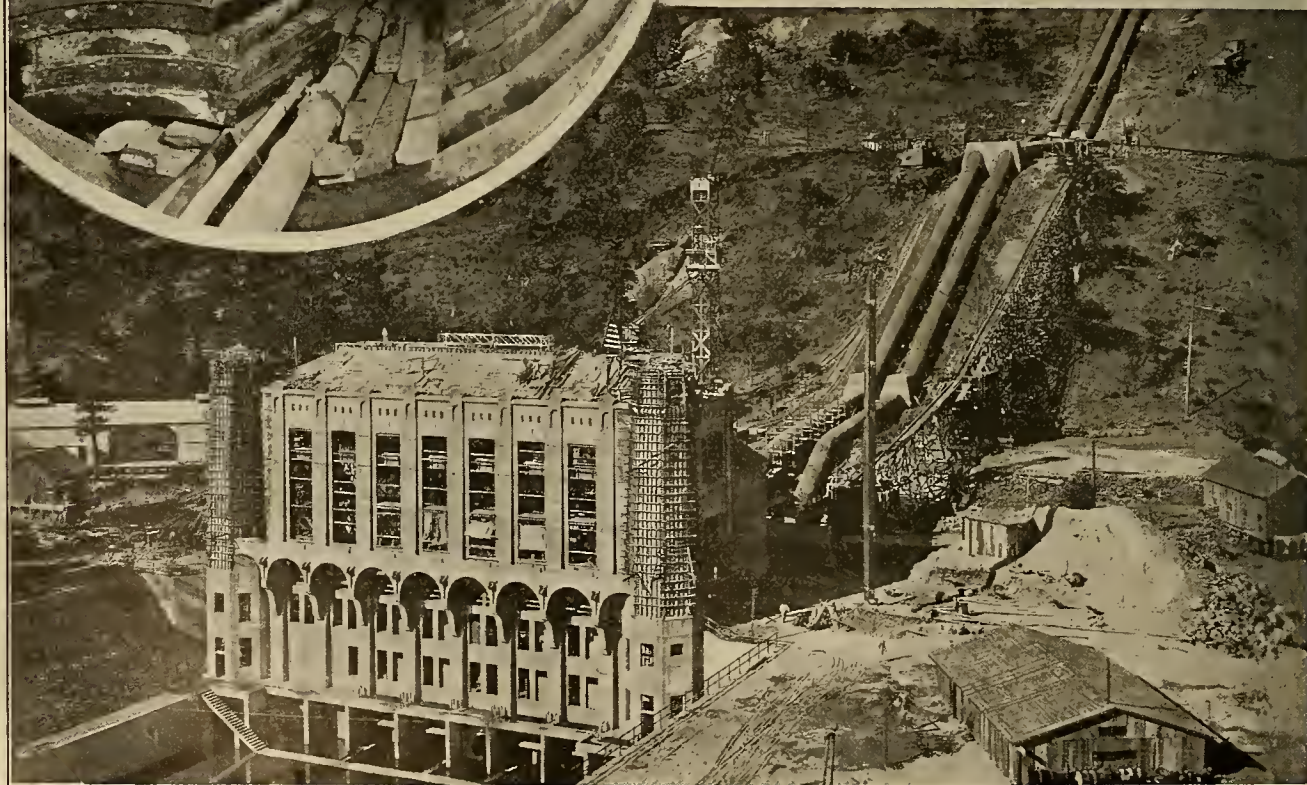
Below Pit No. 1 four additional developments are planned. Pit No. 2 project will be constructed about a mile downstream and will consist of a diversion dam, outlet tunnel and $2\frac{1}{2}$ miles of open canal. Here the installed generating capacity will be 23,500 horsepower.

Pit No. 3 development will be located at a point below Peck's Bridge where a diversion dam 100 ft. high will create a reservoir of about 32,500 acre-feet capacity, from which a tunnel nearly four miles in length will convey the water through the mountains to a point about 313 ft. above the Pit River where the power house will be constructed at what is known as Lindsay Flat. The installed capacity here will be 90,500 hp.

Pit No. 4 will be similar in layout to No. 3, two miles below its predecessor. A pressure tunnel from

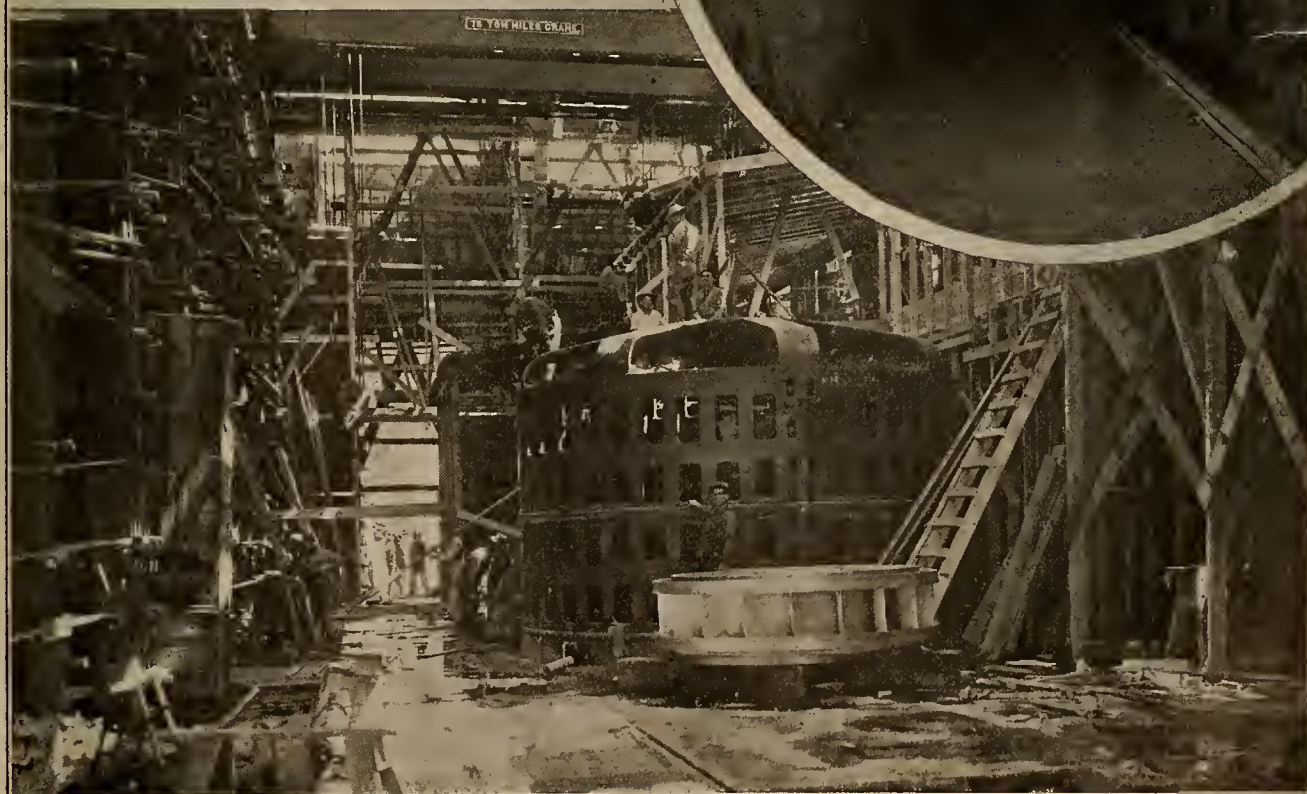


WATER from Fall River will pass to Pit No. 1 power house through the reinforced concrete intake structure shown above. Each of the three openings will be controlled by a radial gate, 20 ft. high and 10 ft. wide. A highway bridge spans the canal over the gates. A portion of the circular section of the two-mile tunnel through Saddle Mountain, prior to being lined with concrete, is shown on the left. The view below shows Pit One power house shortly before completion. This building is 42 ft. wide, 135 ft. long and 82 ft. in front elevation. A tailrace 1,200 ft. in length leads to the river.





AFTER passing through the intake gates shown on the opposite page the water from Fall River is conveyed by an open canal of 1,800 cu.-ft. per second capacity to the east portal of the tunnel, shown above. The canal is 30 ft. deep with sloping sides. Most of the tunnel is of horseshoe shape similar to the view shown on the right, approximately 16 ft. high and having a bottom width of 13 ft. The concrete lining is 15 in. thick. The 35,000-kw. generators, shown below in the process of installation, are the second largest of their kind in the world. The plant will contain two of these units with a capacity of 93,300 hp.





An artist's conception of an airplane view of the Pit River Development

three to four miles in length will lead directly from a diversion dam and reservoir to the power house where the installed capacity will be 107,200 hp.

Pit No. 5, the Big Bend project, will be the largest of all. The installed capacity will be about 254,600 hp. The completion of a seven-mile tunnel, which is the major engineering project, is estimated to take about five years.

A World's Record in Transmission

The transmission of voltage at this high pressure has been determined to be the most economical method by which the large block of power generated may be transmitted to its point of utilization. The distance is approximately 200 miles; the amount of energy to be transmitted will ultimately be in the neighborhood of 600,000 hp. Investigations were made based upon the following facts: As the length of the line is increased, a higher voltage is desirable, since the line loss is directly proportional to the length of the line and increases as the square of the load carried. That is, if the voltage is kept constant

on a given line and the load doubled, the line loss will be four times that of the first case. Nothing is gained by increasing the size of the wire beyond a certain point, as there is a point beyond which, with a given frequency, voltage and length of line, an increase in the size of the conductor will not increase the capacity of the line. It was found that at a voltage of 165,000, a single circuit would be able to carry 67,000 kw. and at 220,000 a single circuit would be able to carry 120,000 kw., or 160,000 hp. at a loss of not over 8 per cent. Therefore, it would be more economical to build the two-circuit lines to carry the 600,000 hp. which would be generated at Pit River at 220,000 volts, than to build eight circuits for transmission at 165,000 volts, or sixteen circuits at 110,000 volts. The number of circuits in each case allows for some reserve capacity.

Solving the Transportation Problem

From the time construction was first undertaken on the Pit River development, transportation was the most troublesome problem, due to the fact that for

several months of the year snow and mud rendered the roads over the mountains practically impassable. During these months only the most necessary supplies were hauled for thirty-five miles on wagons or sleighs from Bartle, terminus of the McCloud River railroad, to the construction camps, where work remained almost at a standstill.

The only adequate solution of the transportation problem was determined to be a standard gage railroad. During the winter of 1920-21 a survey was made from Bartle to Pit No. 1 power house site. This route was direct as well as feasible, for it furnished a short connection to a central distributing point on Pit River and insured a tonnage large enough to absorb the expense of railroad construction.

The route of the railroad, $34\frac{1}{2}$ miles in length, was cleared of heavy timber, a roadbed had been graded, trestles and culverts built, and the track completed to Pit One power house site in 120 days. The road was built with 4 per cent maximum grade and 15 per cent maximum curvature.

As the road neared completion, a well planned construction camp for 500 men was erected at its terminus, and another for 150 men was built at the intake of the project, near the town of Fall River Mills. Warehouses, platforms, side tracks and other serviceable terminal facilities were provided for the quick and economical unloading, housing and distribution of materials and supplies.

Since the road has been in operation, only minor interruptions to traffic have occurred. Without the railroad only a small percentage of this tonnage could have been hauled and, this at excessive cost. Construction progress without the railroad would have been negligible; with it, very substantial progress was effected.

Community Center Is Notable Feature

A notable feature of the Pit River development is the establishment of a community center. It consists of a large club house in which it is proposed to take care of all single men, guests and work crews; six cottages for the men with families, four of these having four rooms and two having five rooms, a large garage, warehouse and post office. The club house will be the central building of this

community and, also, the center of the social activity of the four plants within a few miles' radius. All of the appointments of the club house and cottages are modern in every particular. Recreation facilities for the employes residing in this comparatively iso-



This view from Hat Creek No. 2 power plant gives an idea of the wide valleys and winding streams characteristic of the Pit River region.

lated region have been provided and water, fire protection, sewer and lighting systems installed.

Remarkable Engineering Achievements

When the water is first turned into the giant turbines, which are the second largest of their kind in the world; when energy is transmitted through



Vaca substation, the largest terminal station of its kind in the world, shown on the left, is rapidly nearing completion. Step-down transformers and synchronous condensers will be installed here. Note the workmen standing on the cross-members of the bus structure on the right.



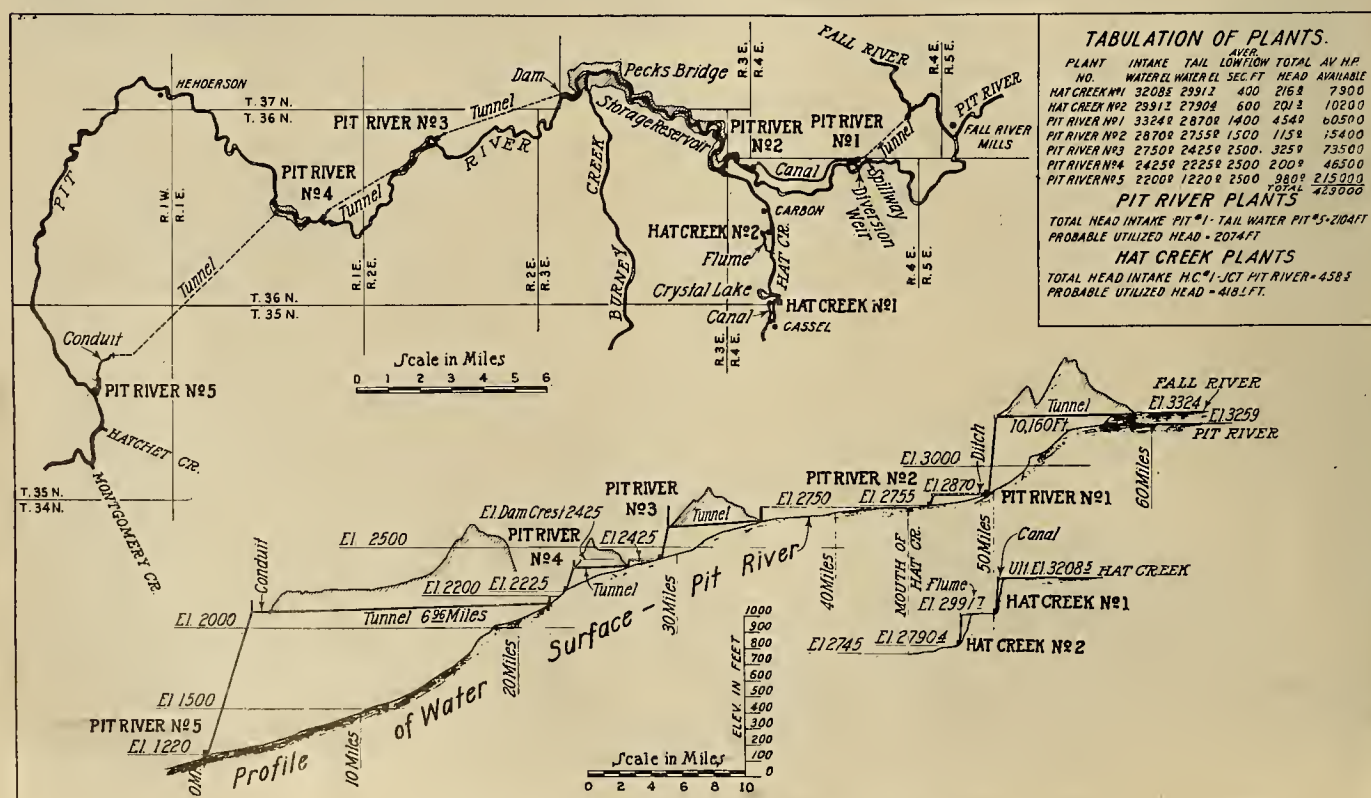
The men responsible for conceiving and carrying through the Pit development are shown above. John A. Britton, vice-president and general manager, is standing on the rear of an excursion train which recently conveyed a party of California editors to the Pit region. On the right Wigginton E. Creed, president of the Pacific Gas and Electric Company, is shown in front of the clubhouse. In the central picture the following are shown, reading from left to right: Top row—Grover Green, field

engineer; John A. Britton, vice-president and general manager; W. E. Creed, president; E. H. Hatch, resident engineer. Lower row—James Martin, superintendent of construction; J. P. Jollyman, chief of division of hydroelectric and transmission engineering; O. W. Peterson, engineer of general construction; A. H. Markwart, vice-president in charge of engineering, and P. M. Downing, vice-president in charge of electrical construction and operation.

the copper wires, part of the largest single order of copper ever placed, at the world's record of 220,000 volts, to the largest terminal substation in the world at Vaca, there to be distributed to farms, homes and industries, California will have added another page to her volume of achievements in hydroelectric development.

When the tremendous block of power which will be developed on the Pit River, equivalent to the work of one million laborers a day, is delivered into the interconnected transmission system of the state, the future agricultural and industrial growth will be insured for years to come. For every time one horsepower in power plant development in the mountains is connected to any one of the giant transmission lines of the West, it means that twelve acres

of unproductive land worth three hundred dollars will have applied to it four horsepower in motors for irrigation and general use, producing one thousand dollars in new crops per year, thus increasing the original value of the land from three hundred to an average value of twenty-four hundred dollars. To industry, it means that for every time twenty-five horsepower is harnessed in the mountains, an average of a factory and a half starts up in one of the great cities of the West—involving a capital investment of almost one hundred and fifty thousand dollars. This sets in motion a hundred horsepower in motors, turning the wheels of industry and providing employment for from thirty-three to thirty-four more people and producing over two hundred thousand dollars in new commodities.



Map and profile of the Pit River Power Development

The Purpose and Problems of 220,000-Volt Transmission

Why Transmission of Energy at 220,000 Volts, Which Represents the Greatest Advance of Proven Practice That Could Be Considered Conservative Was Chosen For the Pit River System

By J. P. JOLLYMAN

Electrical Engineer, Pacific Gas and Electric Company

IN undertaking the development of the Pit River the Pacific Gas and Electric Company was confronted with the problem of transmitting the very large amounts of power involved. The power from the initial developments would be required in the San Francisco Bay regions since this is the district containing the major portion of the Company's load. The amount of power to be transmitted would be nearly 100,000 kw. for the initial development and about 450,000 kw. for the complete development. The primary transmission would have to be about 200 miles in length and the secondary transmission from a central receiving point to the load centers in the San Francisco Bay district would be 40 to 50 miles.

The Company had 110-kv. lines in operation and the operation of lines up to 160 kv. have been proven by actual use, while 220-kv. transmission was being discussed by engineers as a possibility. The apparent possibilities of 220 kv. lead to a very careful study of the possibilities and limitations of transmission circuits over a wide range of voltage. The general characteristics of a 200-mile 60-cycle circuit for voltages up to 440 kv. are shown on the accompanying chart. The most important facts shown by this chart are:

- (1) The capacity of the circuit increases with the square of the voltage.
- (2) The per cent of lost power decreases as the voltage increases.
- (3) The cost per kilowatt transmitted decreases as the voltage increases.

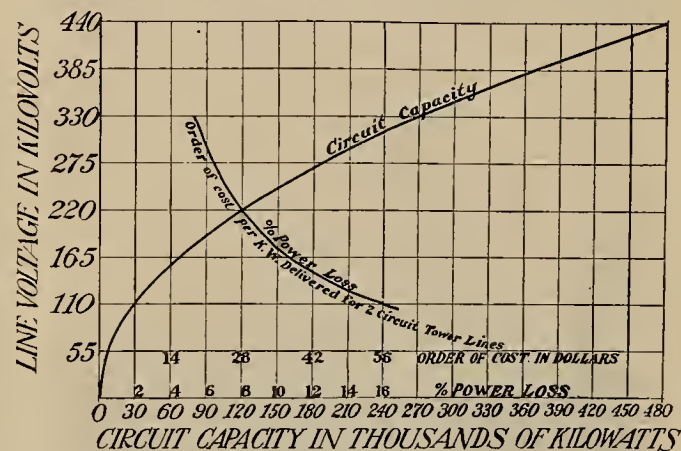
Another important factor not shown on this chart is the increase in the kva. of the line charging current which is in proportion to the square of the voltage.

220,000 Volts Proves Best

The important question to be decided was how high should be the voltage of the Pit transmission. It was decided that 220 kv. represented the greatest advance of proven practice that could be considered conservative. Furthermore, the amount of power which one circuit could transmit fitted the development program very nicely. It was felt that a spare circuit for at least the average load should be had at all times. A double circuit line would therefore provide a spare circuit for the initial development and two double circuit lines would give a spare circuit for the ultimate development. To have undertaken a still higher voltage would not have been conservative nor would it have given a number of circuits sufficient to insure reliable and convenient operation. Another factor in determining the line voltage was the question of the sizes of generating units required to handle the line charging current. A

200-mile 220-kv. 60-cycle circuit requires a unit of 35,000 kva. to charge the line and deliver a normal voltage at the receiving end. Such a unit is about as large as is desirable for installation. At a line voltage of 275 kv. the charging kva. would be about 55,000 and this would require a unit of larger capacity than would be desirable in any except the last of the Pit plants projected.

The advance in the art of transformer and switch design removed any doubt of the entire feasibility of apparatus of this character for operation at 220 kv. It was realized that the transformer units should be of large capacity and that the oil



Curve showing the economics of high voltage transmission for 200-mile, 60-cycle circuits

switches would be large and expensive. However, comparatively few units would be required.

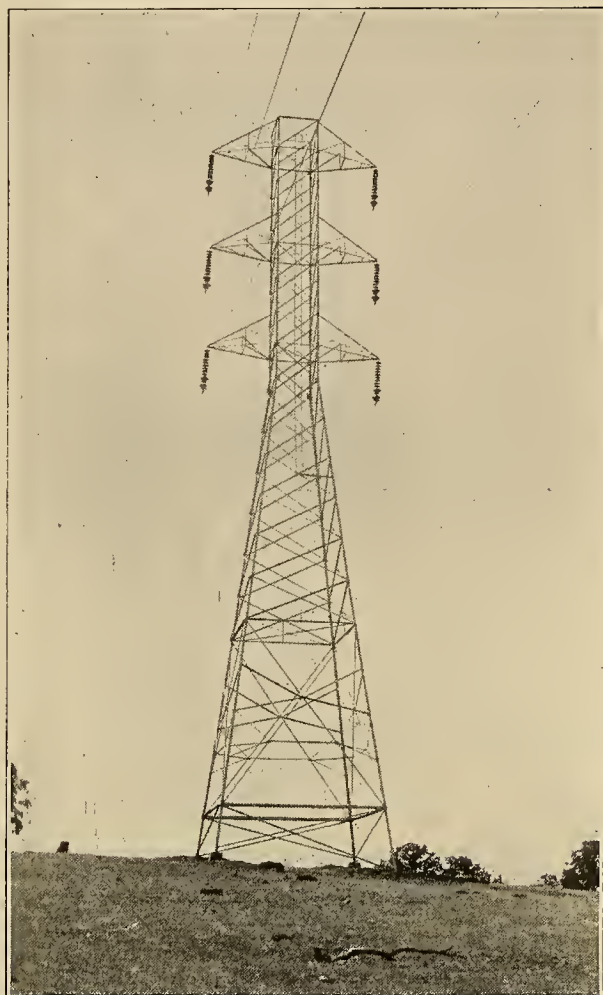
Technical Problems Encountered

The principal technical problems encountered in designing the 220-kv. transmission reduced themselves to the problems in connection with the transmission line itself. The most important electrical problems relate to corona discharge from the conductors into the air, the design of line insulators and the voltage regulation of the transmission circuit.

The problem of corona arises from the fact that if a high voltage is impressed upon a very small conductor there will be a discharge of electricity into the air surrounding the conductor with a loss of energy. This discharge is called corona and has the appearance of very small flames shooting out of the wire into the surrounding air. Corona may be avoided for any given voltage if the size of the conductor is made sufficiently large. For 220 kv. the conductor size required is eight-tenths of an inch in diameter or larger.

Some of the problems relating to corona and to the line insulators can perhaps be better understood

if a comparison is drawn between an electric transmission system and an hydraulic transmission system where the energy is conveyed by means of water under exceedingly high pressure. For example, the water arrives at our Pit No. 1 Power House in two pipes 8 feet in diameter under a 190-pound pressure.



Standard transmission tower on the 220-kv. transmission lines of the Pit River system of the Pacific Gas and Electric Company. There are approximately 142 miles of this type of tower, which measures 62 ft. to the lower cross-arm, with 15 ft. of vertical separation of conductors and 24 ft. between circuits.

If the apparatus in the power house transformed this water into high pressure water and pumped it into three pipes each nine-tenths of an inch in diameter the pressure would be about 1,500,000 pounds per square inch. To support this pressure would require pipes of steel having an outside diameter of about 8 feet. This diameter is assumed on the basis that the stress within the walls of the pipe could be made uniform from the center to the surface. As a matter of fact a pipe of this thickness and subject to this pressure made of one piece of steel would have very much more stress near the center than it would near the surface.

Avoiding Corona Losses

When electricity is transformed to a high voltage such as 220 kv. and this voltage is impressed on the line conductors, electrical stresses are set up in the surrounding air somewhat similar to the mechanical stresses set up in the walls of the steel pipe.

Corona may be likened unto a cracking of the walls of the tube of the pipe outwardly from the center due to the excessive stresses set up in the material at this point. The line insulators which must be used to support the conductors are subject to the voltage impressed on the line. The electrical stresses which the insulators must resist can be better appreciated by returning to our pipe analogy for a moment. Imagine holes bored into the center of the pipe and then plugged. The plugs must resist the enormous pressure which tends to blow them out. The insulator is like an electrical plug in an electrical hole in the air. The electrical stresses do not tend to force the insulator away from the conductor but there is a strong tendency for a leakage of electricity through the insulator and along the surface of the insulator. The insulators must withstand these stresses under all conditions of weather, whether it be fair or stormy. They must not permit an excessive leakage of electricity over their surface when the surfaces of the insulators have become covered with dust and dampened with fog or light rains.

Design of Initial 220-Kv. Insulators

The insulators must also contend with the tendency to concentrate excessive voltage stresses on the portion of the insulator next to the conductors even as the walls of our pipe have to contend with the tendency for excessive stresses to be set up near the hole through the pipe.

The selection of suitable insulators for 220-kv. transmission has been made the subject of a very thorough investigation in which we have had the hearty cooperation of the manufacturers of insulators. The result has been the selection of improved types of insulator units for use in the string of insulators with which the transmission is being equipped. For the initial installation four special units are used next to the line conductor and nine standard ten-inch units are used in the balance of the string. A combined splash-plate and corona shield having much the form of an insulator with a total



Synchronous condensers prior to installation at Vaca substation. These condensers, rated at 20,000 kva. at 1,050 amperes, 11,000 volts, 600 r.p.m., are of the horizontal type with revolving field.

diameter of sixteen inches will be used between the conductor and the first insulator. It is not intended that this assembly will constitute the final 220-kv. insulator. Efforts are being made to develop insulator units which individually will have even higher

capacity to resist leakage and flashover than any units thus far produced. Should success attend this effort, it seems probable that one or two such units would be inserted in the string next to the conductor.

Large Generating Units Required

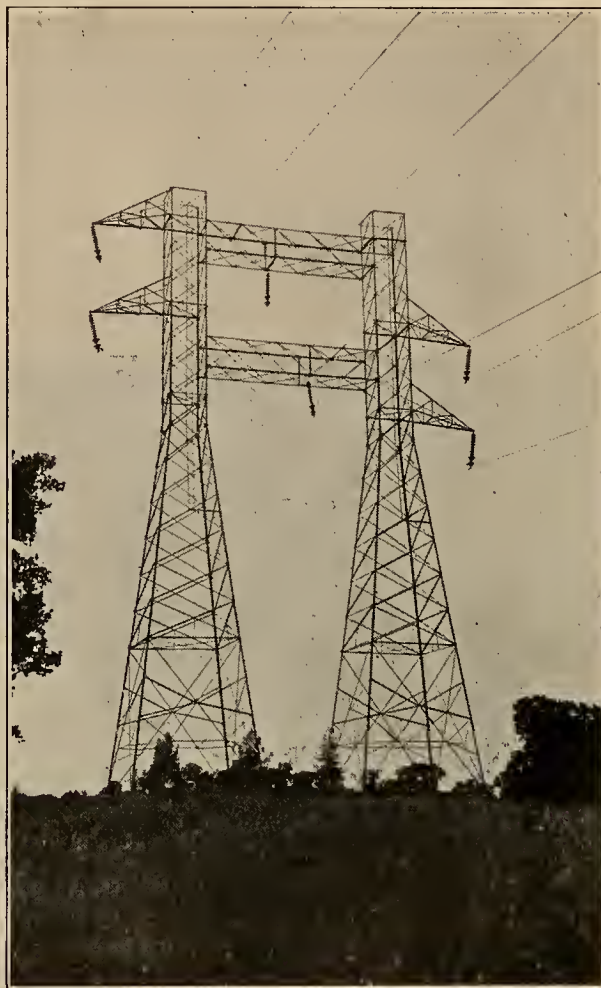
The control of the voltage of a 200-mile 220-kv. transmission presents a difficult problem. In the first place, a very large generating unit is required to bring the line up to voltage. In the case of the Pit transmission the 35,000-kva. generators which are being installed in our Pit No. 1 power plant are about the smallest generating units that should be used with a transmission of this voltage and length.

A 220-kv. circuit could not carry 120,000 kilowatts without an excessive variation in voltage between the generating and receiving end unless the voltage at the receiving end is controlled by synchronous condensers. A synchronous condenser functions in relation to a transmission line very much as a bearing functions on a shaft. The shaft transmits energy by means of the turning forces applied, but it must be supported at intervals by bearings or else it will bend to such an extent that its ability to transmit power will be greatly reduced. The synchronous condenser supports the voltage of the line and permits the line to devote its attention to the transmission of energy. By so doing the cost of transmission is reduced because the increased capacity gained in the line more than offsets the additional cost of the synchronous condenser. It has been estimated that the cost of the Pit transmission with synchronous condensers is approximately three-fourths of the cost that would have been incurred if they had not been used.

Synchronous Condenser Effects Savings

An illustration of the purpose and economy of the synchronous condenser as an auxiliary to high

Two hundred and twenty kv. transmission has not heretofore been used because the amounts of power which it has been desired to convey over one circuit have not been sufficient to justify the expense. As has been stated heretofore, the capacity of a 220-kv. circuit is from 120,000 to 140,000 kw., and when



Standard transposition towers which are placed at approximately eighteen-mile intervals on the 220-kva. lines of the Pit River system of the Pacific Gas and Electric Company. These towers are formed of two standard towers, with extra long cross-arms, and measure 35 ft. between the centers of the towers.

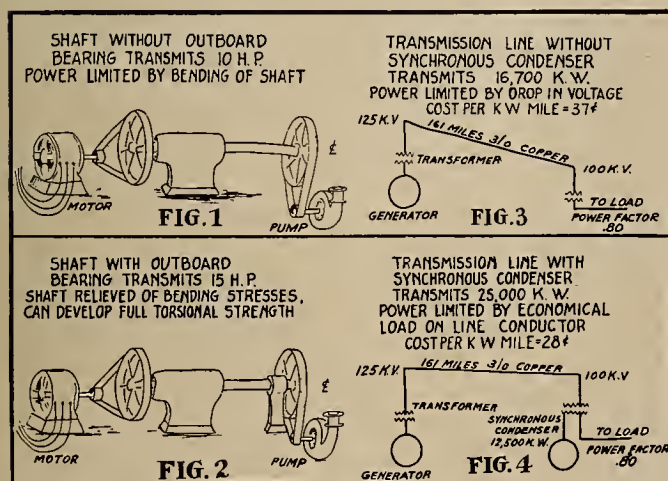


Chart showing the mechanical analogy for a synchronous condenser on the end of a transmission line.

tension transmission is shown on the accompanying chart. The figures given for the electrical transmission relate to a 161-mile 125-kv. circuit but are illustrative of the benefits to be derived from the use of synchronous condensers on the 220-kv. circuit.

loaded to this extent the cost per kilowatt-mile is less than if a lower voltage were employed. However, the total cost in dollars per mile for a 220-kv. transmission is about double the total cost per mile for a 110-kv. transmission. The amounts of energy which we have heretofore been required to transmit have not been so great as to require the 220-kv. transmission. Furthermore, we have not had the opportunities to install the very large generating units which are required in connection with the 220-kv. lines.

The economic advantage of the development of 220-kv. transmission is extremely important. The further development of large amounts of hydroelectric power and its economic transmission to the points of use is made possible. The value to a community of hydroelectric power delivered at a low cost is almost inestimable, thus 220-kv. transmission insures a continuation of low cost energy for many years to come.

The Diesel Engine in Isolated Districts of the Southwest

Economies of Operation Alike in Space, Fuel and Attendance Make the Diesel Engine an Important Factor in the Industrial Development of the Southwest as a Forerunner to the Later Development of Water Power

By A. A. TACHELLA
Busch-Sulzer Bros., San Francisco

DUE credit must be given to the Diesel engine, for making the great comforts that electric current offers for home and industry, available at very low rates to the isolated town and industrial or mining plant.

The Southwest with its isolated and medium capacity industrial centers, and its attractive fuel prices, has been the field for an increasing number of such installations whose records show an operat-

The operating record of a 30 day non-stop run with a 520 Brake Hp. Busch-Sulzer Diesel engine at the plant of the Tucson Gas, Electric Light & Power Company, Tucson, Arizona, is given below. The engine during this time was working under ordinary field load conditions, but due to the high economy of the Diesel at various loads, an average output of 11.15 kw-hr. per gallon of fuel or 468.3 kw-hr. per barrel was obtained.

A closed cooling water system is used in this plant, that is, the engine circulating water is cooled in a condenser by native water which in turn is cooled by tower. In the table below the amount of makeup water for both systems is given. The record of cooling water consumption will be of great interest to interior plants where the water problem for a power plant is often a very difficult one.

Summary of 30-day, Non-stop Run of 520-hp. Engine at Tucson Gas, Electric Light and Power Co., Tucson, Ariz.

Normal capacity of engine at Tucson (2,400 ft. alt.).....	498 B.h.p., 335 kw.
Test started	6 p.m. Dec. 24, 1919
Test finished	6 p.m. Jan. 23, 1920
Maximum load on engine.....	330 kw.
Minimum load on engine.....	120 kw.
Total kw-hr. output	191,590
Total gallons fuel oil used.....	17,174
Average kw-hr. output per day.....	6,386.33
Average gallons fuel oil used per day.....	572.46
Average hourly load in kw.....	266.09
Average hourly fuel consumption in gallons.....	23.85
Average gallons fuel oil used per 100 kw-hr.....	8.96
Average kw-hr. output per gallon fuel oil.....	11.15
Kind of fuel	Calol 24 Be.
Cost of fuel oil f.o.b. Tucson, per gallon.....	\$0.068
Average fuel cost per kw-hr.....	\$0.00609
Lubricating oil-bearings and cylinders.....	Texas "Ursa"
Lubricating oil-air compressor	Borne & Scrymser No. 1
Total gallons "Ursa" oil used.....	90.5. Average per day, 3.016
Total gallons B. & S. No. 1 oil used.....	3.0. Average per day, 0.1
Average temperature of bearing oil.....	in, 106 F.; out, 118 F.
Average gallons makeup engine cooling water per day.....	29
Average gallons makeup tower cooling water per day.....	3,630
Average temperature cylinder jacket cooling water.....	in, 83° F.; out, 120° F.
Average temperature piston cooling water.....	in, 83° F.; out, 120° F.
Average temperature exhaust valve cooling water.....	in, 83° F.; out, 129° F.
Average temperature exhaust header cooling water.....	out, 140° F.
Average pressure cooling water to engine.....	22 lb. per sq. in.
Average pressure cooling water to pistons.....	21 lb. per sq. in.

The space requirements are very readily seen from the illustration showing a complete 750 B.h.p., 500-kw. Busch-Sulzer Diesel generating unit. The complete weight of this unit is 204,000 lb. It can be started from cold and put into parallel with other units in the plant and loaded to full capacity in less than five minutes. Paralleling such units presents no difficulties and is facilitated by means of an electric speed change device attached to the governor on the engine and operated from the switchboard.

The Diesel engine is especially well suited to raw water ice plants and insures ice at minimum cost, which is of great importance for the refrigeration of fruit and vegetable shipments from California to the East. Such a plant has been installed at Needles, California, of 150 tons daily capacity. The fuel consumption in such size plants varies from 4.5 to 5 gallons per ton of ice produced; in smaller 30-ton plants, 5.5 to 6.5 gallons of fuel are consumed.



750-B.h.p. Busch-Sulzer Diesel engine, installed in 1921 in the city of Palo Alto, California

ing cost that compares quite favorably with the cost of the largest steam central stations.

Being a self-contained unit, the Diesel engine lends itself to great advantage for installations in communities or districts not yet reached by the hydroelectric system. On account of the low price current available these communities will develop much more rapidly and later when the power demand has been increased, construction of feed lines from hydroelectric systems is made possible.

Diesel engines economize in space, fuel and attendance. They start any time at a moment's notice, and will assume a load immediately. While their economy is greatest at full rated capacity, they maintain their efficiency to a very remarkable degree through a very great range of load—the same approximate efficiency obtaining from ½ load to 10% overload, assuring great economy at all loads likely to be met with under commercial conditions.

So far as the life of the Diesel engine is concerned, it may be pointed out that there are now engines in this country that have seen daily service for seventeen years, having been rebored but once, which are working today with the same economy as when installed.

Eliminating the Waste in Industry

Shortcuts in Management and New Power Applications Which Have Been Adopted in Western Industrial Plants for Eliminating Waste, Increasing Production and Cutting the Cost of Manufacturing Processes

By LOUIS F. LEUREY
Industrial Electrical Engineer

Chance For Self Education Increases Efficiency

Course of Instruction Offered to Employees by Western Refinery Marks Constructive Step in Industrial Relations

The mechanical department of the California and Hawaiian Sugar Refining Corporation at Crockett, California, has recently launched a most efficient plan to promote self-education among its mechanics of various classes, and by distinctly limiting the objectives to be achieved, has instituted what seems to be one of the most constructive plans inaugurated by any one in recent months.

Under the leadership of the chief engineer of the company and directed by his technical staff, classes in mechanical drawing have been instituted. Each class is limited in number to twelve men so that individual attention of a most efficient character is being devoted to each member. The classes are intended to form a sort of post graduate course, supplementing the night instruction now given by the high school authorities along similar lines and the cooperation is so close between the high school and the industrial plant in this respect that the same basic idea underlies each branch of instruction.

The twelve men in each class are selected from all the candidates applying for the course and the selection is

based on priority of application plus a fitness to meet the advanced work being offered.

The purpose of this class is not to make draftsmen, but rather to help the

THIS DEPARTMENT

will be devoted to a discussion of the various problems of waste in industry as they affect western industrial plants. Readers are asked to aid in the solution of the most vital problems facing industry by sending in accounts and pictures of the various practices for combating waste, which have been adopted in plants with which they are familiar. It is only by thus cooperating with Mr. Leurey that the fullest service can be rendered. Space rates will be paid for all material which is published.

men to express their ideas through the medium of sketches and drawings and to interpret the ideas of others so expressed; also through the work to stimulate their ambitious thought.

The basic idea behind the course is not to hold out before the applicants a

problematical reward in the shape of higher wage but rather to encourage self-development which in the broader sense is its own reward. But it goes without saying that work of this sort cannot but help, in the final analysis, to bring a pecuniary reward which, however, is only incidental to the main purpose.

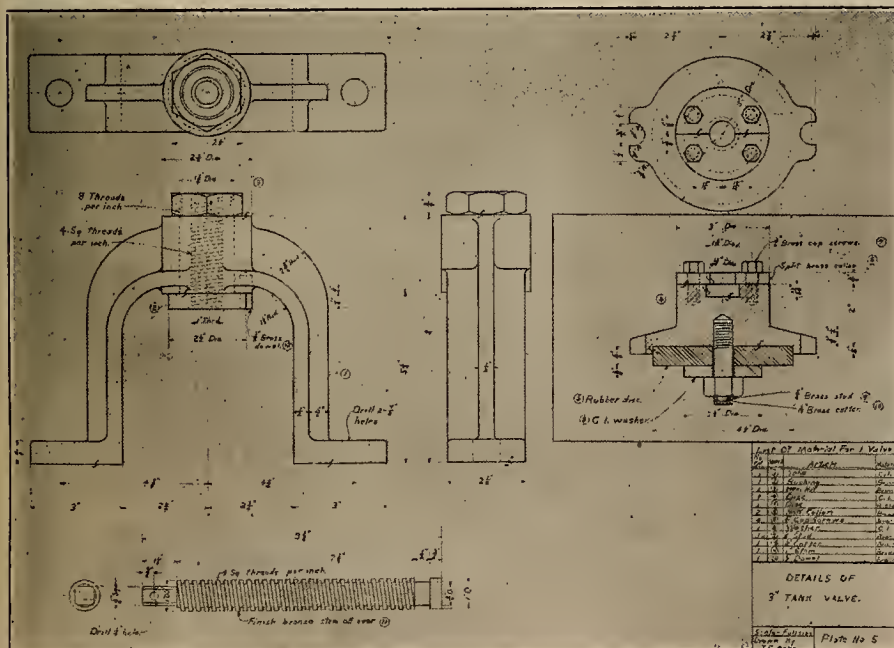
The peculiar efficiency of the classes offered lies in the fact that instead of giving generalized instruction such as is common in the educational field, the men instituting this course recognize that the class of mechanics who are candidates for it have already achieved success as evidenced by their workmanship in the physical handling of many types of machinery, and the whole course is developed around the actual machinery which is being used by these men in the every-day routine duties at the refinery.

The actual component parts of the most frequently used equipment in the service of the refinery is brought into the class room and is jointly dissected by the instructors and the pupils and reconstructed by the pupils on the drawing board under the guidance of the instructor-engineers. The men who are already experienced in the physical handling of the machinery then see it in a new light under the guidance of the engineers who have not only achieved success in the technical line but also in the physical direction of the affairs of a large institution, and thus, to all intents and purposes, the high school post graduate work is being carried on.

The writer had the pleasure of inspecting a number of plates turned out by these men and it would be hard for any one to decide which showed the greater excellence.

By arrangement with the high school authorities who are conducting the night courses, the preliminary work is given in the night classes and the instructors in the night schools are being assisted by the factory engineers in keeping the classes very closely based on the actual work being done at the sugar refinery, for it must be remembered that Crockett is primarily a one-industry town and the great majority of its citizens are directly or indirectly interested in the operations of the sugar refining corporation.

The engineering staff have shown great wisdom in limiting their efforts to a size of class and to a class of work which they can handle with the greatest of efficiency. All of the work is done outside of the regular operating hours of the men and during certain regular evenings, and during other evenings of the week or at a time when they are



A sample of the work done by one of the mechanics of the Crockett refinery of the California and Hawaiian Sugar Corporation in the course in mechanical drawing which the company engineers conduct for the employees. The drawing is a plate depicting a 3-inch tank valve. The subjects of the drawings are taken from the mechanical equipment of the plant and usually represent parts which the employees must frequently handle.

off shift, the drafting room is thrown open to them. All of them have taken advantage of this privilege which shows without a doubt that the work is intensely interesting to them.

The only thing insisted upon by the management is that during the regular instruction evenings of the week, every man must be present unless he is kept away by a serious or unavoidable cause. In this way the men are impressed with the fact that the engineers who are giving up their own time for this work are doing so with a serious purpose in mind, and consequently it would be unfair to the interested men to permit a half-hearted attendance on the part of any individual. In fact, the number of men applying for this class is far in excess of the number who are accepted, and since the first class of twelve men has been inaugurated and taken a certain way in the course a second class of twelve men has been started.

If it proves within the capabilities of the instructors to devote sufficient time to the extension of this work, it is contemplated to extend this idea into the field of simple mathematics, in which again the daily operations of the refinery will be used exclusively as a base for the exemplification of methods of simple calculation.

It would seem that this constructive type of self-education might well be inaugurated in other one-industry towns, or wherever the factory management and its employes are in constant relation with each other, not only during the working hours of the day but in their social contact during the periods of recreation.

Precautionary Measures Protect Against Static Electricity

Upon a general survey in the industrial field, it has been noted that a considerable number of explosions and disastrous fires have been occasioned by sparks due to static electricity. One of the principal fields in which this occurs is in the handling of gasoline, especially from tank wagons.

As a preventive measure, Stephen H. Brooks, president of the Oil Conservation Engineering Company, has suggested the following remedy, which, it is claimed, has proven very successful:

"Take a piece of pipe and drive it into the ground below the frost line and let it extend about 8 ft. high. It should be driven into the ground alongside the gasoline station close to a point where the tank is to be unloaded. Attach to this piece of pipe about a 12-ft. length of iron chain and when the truck drives up to unload throw the chain over the top of the truck tank. This is a very inexpensive piece of apparatus and may be the means of preventing disastrous fires. Some companies absolutely require this and have it installed at all their stations."

Some of the California oil companies have short pieces of chain permanently attached to their tank wagons and allow this to dangle in transit and ready for use as a connection to a permanent ground pipe when arriving at the filling station.

Another field in which explosions due to this cause have proven disastrous is in the harvester machines, particularly in the Pacific Northwest. These machines usually have a long belt drive

which permits the accumulation of heavy electrostatic charges. Again, in this case, based upon experience, they have found it necessary to drive ground pipes and lead this static charge to the earth all the while the machines are in operation.

There have been infrequent instances where disastrous fires have resulted from static electricity where gasoline engines were belted directly to various machines. The rapidly moving belts on the pulleys have resulted in charges which have set fire to grease on the engines. In instances such as this the danger of fire can be considerably decreased by keeping the gas engine as clean as possible. Such a procedure is, however, only a half-way measure. Full protection can only be afforded when the moving parts are properly grounded.

Flour mills, starch factories, powdered sugar mills and other classes of manufacture which produce a fine and explosive dust have all experienced to some extent this trouble from static electricity, especially where considerable belting is in service on the drives.

The final remedy in all of these cases is a simple one of providing a good and permanent ground which will continuously, at all hours, remove the static electric charge from the machine parts and belting.

Extensive Maintenance Prevented By Study of Local Conditions

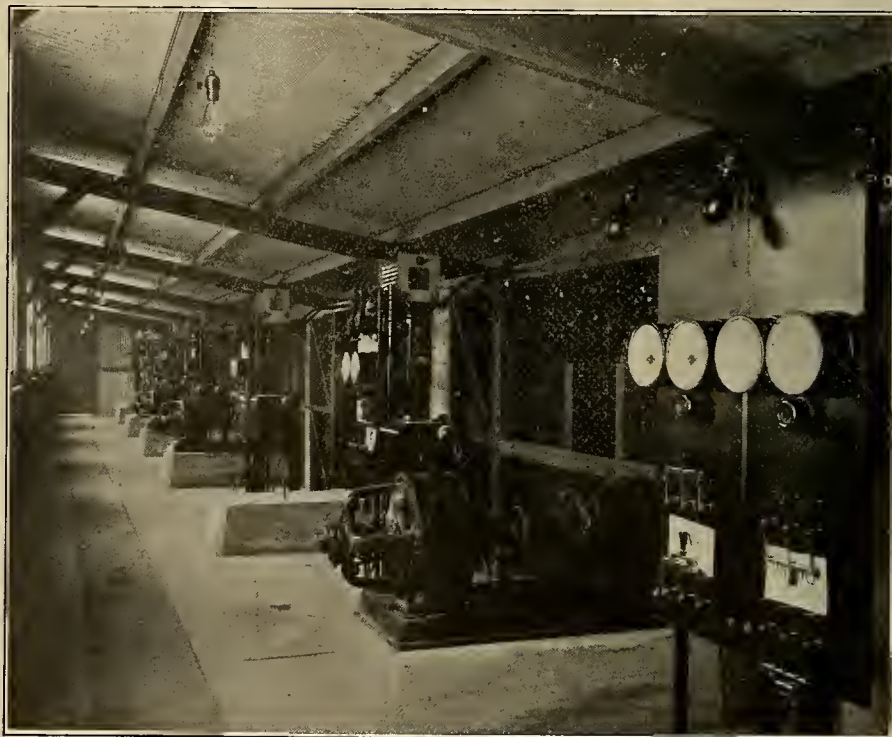
In the industrial field, a great many companies find it necessary to expand their operations and build branch factories in territory far removed from the location of the parent factory. In most of these cases, it is very natural for the parent company to send out an engineer or supervising executive from

the home works to design and build the branch factory. In a number of these cases, due to the fact that it has been impossible for these engineers and executives to acquire an intimate knowledge of local climatic and building conditions, expensive failures or high maintenance has been the result.

In one particular case in California, a large hydroelectric development was planned, in which the water was controlled by very large hydraulically operated valves. Due to this lack of knowledge or the oversight of existing conditions, these valves were located in a part of the building which was not heated, and during the winter period the temperature dropped so low as to freeze the water in the hydraulic cylinders and render these valves inoperative. It became necessary, at considerable expense, to improvise temporary heating arrangements throughout the winter period.

In another case during the war period, eastern engineers building a shipyard on San Francisco Bay and not knowing of the extraordinary mild temperature in this locality, incorporated in the design considerable unnecessary expense in the way of providing for interior downspouts for all roof drainage to prevent freezing.

In fact, in this whole field, there is a very considerable waste due to acts of either commission or omission because executives or engineers have not informed themselves completely of local conditions. The remedy, of course, is a very simple one, the only essential being that the supervising engineer or executive should, in all cases, retain the services of a local engineer thoroughly qualified to advise them on all climatic and special conditions obtaining.



PROPER PROTECTION SAVES UPKEEP ON MOTORS

This photograph shows an installation of equipment housed in a dust-proof lean-to at a large California cement plant. This type of installation, which separates all of the electrical equipment possible from the main plant, where a very dusty condition exists, more than repays the cost of the bulk-heading in lower maintenance and continuous operation of the electrical equipment involved.

Western Dealer, Jobber and Agent

Business building suggestions for the store—Distribution and warehousing methods—Advertising and sales promotion ideas

Getting the Crowds to Visit the Home Electric How Electrical Development League in Northwest Attracted Attention by Judicious Use of Newspaper Space

By R. G. EMERSON

Those readers who have been connected with the planning and operation of a home electrical, or who expect to be engaged in this work, will be interested in an advertising experiment conducted by those in charge of the advertising of a recent home which proved to be exceptionally successful.

foundation of the campaign was the use of newspaper advertising space.

In planning the newspaper advertising two fundamental principles were kept in mind, the first, that the advertisement must stand out from the rest of the page and attract the reader's attention, and, second, that the copy must be brief and interesting enough to get just one idea into the minds of all who read the advertisement.

The first point was met by the use of distinctive cuts and of sufficient white space to cause the advertisement to dominate the page, even though it was of comparatively small size. This was for the purpose of attracting the eye, as a mass of color in a field of drab monotony will cause all to center their gaze upon it. In order to lead this rather casual glance right into the reading matter it was necessary to catch the mental attention, as distinguished from the visual attention, by a "head" or title which would be in line with their everyday interests.

Assuming that the above sequence would hold true in the majority of cases, the next step was to make the copy itself so brief and interesting as to literally lead the reader right through to

to the people of a city of about 40,000 and the surrounding territory.

The advertisements shown on this page are not reproduced as examples of excellent advertisements. Typographically, they are below par. The advertising men on newspapers of smaller communities do not have the experience and capacity as high grade 'layout' artists. This fault is not as seriously det-



"Everett's Home Electrical—"

which is the first free exhibit of this nature in the State, and which will be followed by similar exhibits in other cities, represents the co-operative effort of the electrical industry of Snohomish County to present an educational display of a modern home adequately equipped with 'Electrical Servants.'

Come at least once!

SNOHOMISH COUNTY ELECTRICAL DEVELOPMENT LEAGUE

1014 Colby Avenue
1:00 to 10:00 o'clock p. m.
June 3 to 11



The appeal in this advertisement was to local pride

If a text book were to be written with the title "Advertising the Home Electrical," somewhere in the forepart of the book should be a cautionary note in large letters reading something like this:

"Whatever is said in this book is the result of careful study of this question by the authors and should be of some value to all who are confronted with the problem of properly advertising the home electrical. However, each community is a separate personality and each home represents a distinct problem. It is necessary, therefore, that the advertising program should be adapted to the particular requirements of the situation."

It was with a similar thought in mind that the advertising committee outlined the publicity and advertising for the Everett (Wash.) Home Electrical. Attractive invitations were mailed to all the consumers of electric energy in the country, fender boards were displayed on the street cars, prominent windows were specially decorated for the week and all civic and social organizations were advised of the exhibit. But the



Ladies and Gentlemen:

I am requested to announce that you are all cordially invited to the opening of the

HOME ELECTRIC

which will be open for inspection for eight days beginning June third.

This is a free educational exhibit of a modern home, fully equipped and properly wired in accordance with the latest developments in electrical appliances and illuminating fixtures. It is not an advertising or merchandising display.

Come at least once while the exhibit is open!

Snohomish County Electrical Development League

1014 Colby Avenue
1:00 to 10:00 o'clock p. m.
June 3 to 11




This informal announcement emphasized the fact that the exhibit was strictly educational.

the final line telling where and when the home would be held. This latter need, once fully appreciated, was not exceptionally difficult to meet. The advertising man simply hung a placard on his mental wall, reading "Just One Idea at a Time."

These advertisements merely show how the committee used the ideas expressed above in carrying their message



"I'm glad I went, and I'm going again with all the family!"



"My wife says I'm mistaken a lot if I don't go at least once!"

"The Home Electrical"

1014 Colby Avenue

1:00 to 10:00 o'clock p. m., June 3 to 11




"It's a 'business show' for housewives. Go at least once!"

All copy was brief, with plenty of white space, yet action was urged in every line.

mental to our purposes as might be expected, however, as the other advertisers in the paper are laboring under the same handicap.

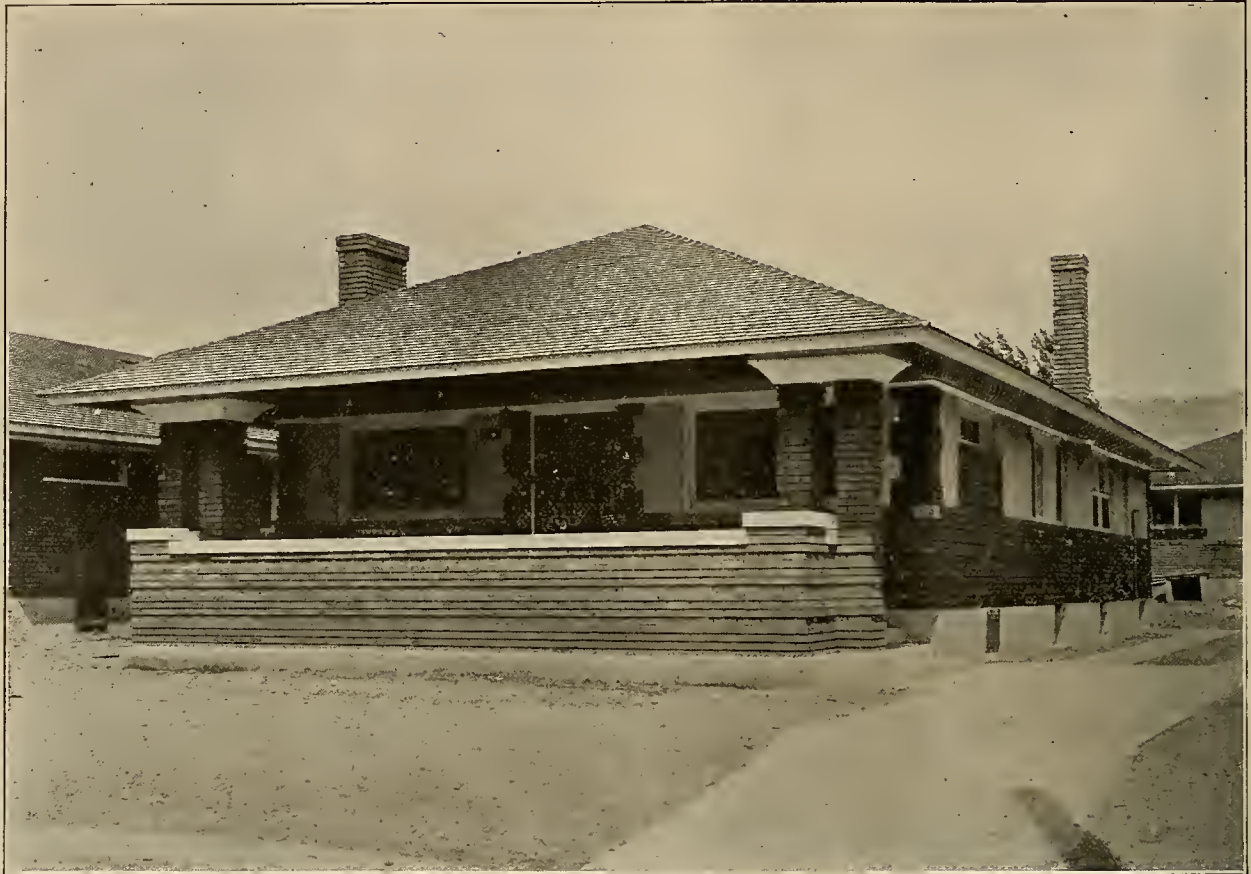
So kindly has the public taken to the Home Electric idea that even the movies are paying the tribute of their attention. A "Home Electric" film is now in process of production, and when it is completed it will be available for exhibition in any community in the country, under the auspices of local electrical and real estate interests.

The film is a five-reel, dramatic picture, and is being made by the Atlas Educational Film Company, Oak Park, Ill. Into it will be woven the story of the actual construction of a house, from beginning to end, including a complete and model wiring installation and a complete equipment of appliances.

Having submitted the idea to real estate boards throughout the country and being promised their full cooperation, the film company plans to put at least ten copies of the picture in circulation simultaneously.

Salt Lake City Electrical Home Highly Successful

Rocky Mountain Electrical Cooperative League Sponsors Home Electrical Which Demonstrates That Moderate Priced Home Can Be Successfully Equipped with Electrical Conveniences Without Excessive Expense



Ten thousand Salt Lake City residents visited the second electrical home to be displayed in that city. The home cost but \$6,500 yet it was completely equipped with electrical appliances



The dining room of the home contained one ceiling light, two wall brackets, two convenience outlets and two switches. The electrical equipment displayed consisted of a fan, a waffle iron, percolator and toaster.



The living room contained two ceiling lights, four wall brackets, three convenience outlets and three switches. The equipment consisted of a vacuum cleaner, a floor lamp, a table lamp, and an electric fan.

Second Electrical Home Shown in Salt Lake City

R. W. Butler of the Mine and Smelter Supply Company Joins Home Electric Legion. Twenty Thousand Visit Display

Salt Lake City's second model Electrical Home, a six-room bungalow, built at an approximate cost of \$6,500, was opened to the public for a period of two weeks, from July 25 to August 6 inclusive.

In presenting this home for the inspection of the public, the Rocky Mountain Electrical Cooperative League successfully carried out the idea of featuring the extensive use of electrical equipment in the moderate priced home. It was clearly demonstrated that the family of ordinary means could enjoy the comfort and convenience of electrical appliances to a much greater extent than is the usual practice, without the expenditure of a large amount of money for what many have considered luxuries only within reach of the wealthy class.

The home has just been completed as a residence for R. W. Butler, manager of the Mine and Smelter Supply Company, and is located at 1929 South 5th East Street. It contains about 50 outlets and 22 switches. The wiring provides for the following distribution of these outlets and switches:

Front Porch:

1 convenience outlet, ceiling light switch, illuminated house number switch, 2 cornice light switches.

Front Bedroom:

4 wall brackets, 2 switches, 2 convenience outlets.

Bath Room:

1 convenience outlet, 3 wall brackets, switch.

Basement:

4 light outlets, switch.

Hallway, Rear:

2 light outlets, two 3-way switches, 1 convenience outlet.

Rear Bedroom:

2 convenience outlets, 3 wall brackets, switch.

Rear Bedroom:

4 wall brackets, switch, 2 convenience outlets.

Kitchen:

Range outlet, 2 convenience outlets, center light, two 3-way switches.

Dining Room:

1 ceiling light, 2 switches, 2 convenience outlets, 2 wall brackets.

Living Room:

2 ceiling lights, two 3-way switches, 4 wall brackets, switch, 3 convenience outlets.

Approximately 10,000 people visited the home during the two weeks, and all were keenly interested in the story of electricity in the home as they were escorted from room to room by competent guides who explained and demonstrated the uses of the various appliances.

Particular stress was laid upon the fact that in building the modern home more attention should be paid to the

electrical installation at the time the plans are made.

While the display in this home was probably not as comprehensive as that of the first one, still there were on exhibition the appliances appropriate to each room of a modern electrically-equipped home; and from a commercial standpoint this was considered of far more value to the electrical industry locally on account of its great appeal to the majority of home builders as something which could be easily applied to any residence of moderate cost.

In the living room was a floor lamp, a table lamp, a 12-inch oscillating fan and a vacuum cleaner (for use throughout the house).

In the three bedrooms were two heating pads, two boudoir lamps, a curling iron, a sewing machine, one violet-ray outfit, one vibrator and one hair drier.

The dining room contained a 10-inch fan, an urn percolator set, a waffle iron and a vertical toaster.

The kitchen was equipped with an electric range, a 6-pound electric iron, an ovenette and a dishwasher.

In the bath-room was a radiant heater and an immersion heater.

The laundry, in the basement, was equipped with an ironing machine, a radiant heater, a laundry iron and a washing machine.

All appliances used in the exhibition were selected by lot, and furnished by the various contractor-dealers and manufacturers' representatives in Salt Lake City.

A particularly striking feature of the exhibit was the absence of any crowded appearance in the display of electric appliances, due to the fact that not too many were shown.

The exhibit was conducted under the auspices of the Rocky Mountain Electrical Cooperative League, with the assistance and cooperation of all the electrical interests in the city. From every standpoint it was decidedly successful.

Window Display and Advertising

By JOE OSIER

Although I understand perfectly that it is much easier to tell men of the industry how to conduct their business and succeed—

Than to make a success of my own affairs,

I take my typewriter in hand for the purpose of informing the readers of this publication what I would do to—

Win a wad—

Were I figuring overhead and worrying about the weekly payroll.

First—I would put my name and business before the buying public and—

I'd keep it there.

To do this, I would decide on a medium of general circulation and buy white space, the same as I would wiring devices, household appliances or anything that I carried in stock. And, every time I got a chance, I'd break into print, in the news section.

Second—I would establish a reputation for high class workmanship and maintain it. I'd advertise speed and service and I would give my customers—

Speed and service—

Or resurrect my sack of tools and get back on the job.

Third—I would brighten up, clean up and dress up my shop—make my windows salesmen—the kind that sell—the kind that cannot be kicked from the front porch or rushed through an office door—

Leading to the street.

I would do all this and more, because, I have found that the men in the selling end of the electrical game who—

Carry the idea under a dented derby that window displays and expensive advertising do not pay are the fellows who bear blisters on their fingers ringing up—

No sale.

They are the men who are always short on Saturday night and who invariably will be found among—

The other bidders were:

Every banker in town knows them—having turned them down on numerous occasions.

By the same token, they are also unfavorably known by every jobber and manufacturer and—

At booster meetings, they are as welcome as a—

Bible tract in a bread line.

For a fact, I have seen electrical shops which reminded me of the home of ol' Tom Morgan—

Or some other town drunkard and—

Without exception, the owner of this ark blatantly told everybody—

Including the world, that—

Any man who let go of real money for advertising and bothered with a window display—

Is a Simple Simon, a witless wight and a candidate for the—

Foolish foundry.

Then, after getting these smart cracks off his chest, this Wisenheimer would stumble over a mess of stock that will never be turned over, finally falling into a dark, evil-smelling office, where he spent the rest of the day peering and pawing over a greasy set of books, trying to figure out why—

In the name of Moses and the beards of the prophets, he couldn't get into the—

Income tax paying class.

Today, the buying public must be catered to. And the business man who is looking ahead will deliberately set out to appeal to prospective purchasers. He knows they want class and he intends to give them class and—

Bill 'em for it.

The business world is moving. Snap into line.

Activities of the West

A Business Man's Department Devoted to Events and Developments in Western Industrial Centers—Including News of Interest to Readers in Public Utility, Industrial and Trade Fields

New Railroad to Utah Mines

Articles Filed for Road to Bring Iron Ore to Proposed Steel Mills

Articles of incorporation of the Carbon County Railroad Company, to construct a railroad 4.79 miles long from the Denver and Rio Grande Western railroad line to the property of the Utah Coal and Coke Company, have been filed in Salt Lake City.

The articles as drawn call for a capitalization of \$500,000, and bids on the construction of the line are being received. The road will tap coal and ores which are to be used in connection with the plans of the Columbia Steel Corporation for the development of the steel industry in Utah.

An application for a certificate of convenience and necessity for the road has also been filed with the public utilities commission of Utah, and will be heard on August 15.

Officers of the company include L. F. Rains, president; A. C. Ellis, Jr., vice-president; L. F. Adamson, secretary; W. W. Armstrong and Duncan MacVichie, additional members of the board of directors. All of these men are interested in the syndicate which has formed the Columbia Steel Corporation.

Alaskan R.R. Makes Prospecting Easy for Stamping Miners

Prospecting without hardship is reported from Alaska when gold was discovered recently on one of the creeks crossed by the Alaskan Railroad. When the discovery was reported, the management of the railroad ran a special train from Anchorage to the scene of the stampede. Instead of mushing across the hills, a large number of prospectors were enabled to visit the scene of the discovery, step off the train, stake out their claims and return to the railroad dining car for luncheon. A lawyer accompanied the special train and looked after the necessary legal matters connected with the new operations. Regret was expressed that an extra baggage car had not been attached, so as to permit the opening of a mining exchange in the evening.

Senator Poindexter's bill providing for an investigation of the Columbia basin irrigation project and authorizing an appropriation of \$100,000 to carry on the work, passed the senate on July 11. The bill will be referred to the committee on irrigation of the house, and it is expected that it will be taken up and reported on soon after the house reconvenes on August 15. If the investigation carried on under this bill proves the project to be practicable, it is hoped that government aid may be secured in carrying out the work.



One of the twenty-six homes which are being constructed in St. Francis Wood, San Francisco, which are completely electrified.

Many New San Francisco Homes Are Completely Electrified

Anticipating the prediction made by Duncan MacDuffie, San Francisco real estate man, by three years, there are under construction at the present time in one San Francisco sub-division a total of twenty-six homes which properly fall into the category of homes electrical.

At a meeting of the San Francisco Electrical Development League two years ago, just previous to the opening of the first electrical home in that city, Mr. MacDuffie predicted that within five years the majority of homes to be erected would be completely electrified. At the present time there are being erected in St. Francis Wood, one of the most exclusive sub-divisions in the city, twenty-six homes, none of which have a flue in the kitchen and all of which have sufficient convenience outlets for every conceivable type of electrical appliance.

The illustration shows the home which is being built for Dr. F. Horner Curtiss at the corner of Monterey Boulevard and San Benito Way. It is one of the twenty-six previously mentioned. The home was designed by H. H. Guttersen.

Weekly Pass System Started by Tacoma Street Railways

The weekly pass system, providing for the issuance of a \$1 pass, good for any number of rides in one week, with transfer privileges, has been instituted on the street railway lines of the Tacoma Railway and Power Company in Bellingham, and the Puget Sound International Railway and Power Company, in Everett. All concerns are subsidiaries of the Stone and Webster interests. The pass systems were installed when the respective city officials demanded a reduced fare on the street railway lines, and are to be tried out by the public. To date, there has been a very active demand for the passes.

Lumber Company to Build

Plans Maturing for New Electrified Mill For Long-Bell Lumber Co.

The Long-Bell Lumber Company is preparing for the construction of its mammoth mill on the Olympic peninsula between the Cowlitz and Columbia rivers, near Kelso, Wash. A crew of several hundred men is engaged in grading the site for the mill and in constructing a dock 500 feet long and 48 feet in width for handling machinery and equipment. A roadway 60 feet wide is being graded and graveled from the town of Kelso to the mill site.

The Long-Bell Lumber Company is one of the first of the large southern pine manufacturers to enter the Northwest field and it is said that its new mill will be one of the largest and most modern in this section. According to reports the mill will be electrically operated throughout and will have a steam electric generating station of 10,000-kw. capacity to supply power.

Tacoma-Lake Cushman Project to Go to Court for Settlement

The city of Tacoma will take to the Supreme Court in the near future, on appeal from the Superior Court of Mason county, its controversy over condemnation proceedings in connection with the Lake Cushman power site, the development of which is opposed by the fisheries board of the state, on the ground of an invasion of riparian rights.

The decision of Judge Wright of the Superior Court, from which the city will appeal, was to the effect that the hatchery lands are devoted to a specific public use and that as such no municipality can condemn them. What the city wants is the right to divert a part of the water which now flows past the state fish lands on the Skokomish river.

An attempt at settlement between state and city out of court has been unsuccessful.

The water power report of District 4 of the forestry service for the fiscal year ending June 30, 1922, just completed in the office of J. P. Martin, district engineer, in Ogden, Utah, recites that 21 permits for transmission lines, and 29 permits for reservoirs, conduits and power houses were issued by the secretary of agriculture for that district. In addition four licenses for the construction of power plants and transmission lines were allowed. As the district representatives of the federal power commission, the forest service has supervision over the permits and licenses issued by the commission.

Seattle Will Have Two Electric Homes During September

Two electrical homes will be opened simultaneously to the public of Seattle shortly after September first by the Seattle Electric Club. A decided departure from the precedents established in other cities where electrical homes have been displayed is the fact that two homes will be on display at one time. Another feature of the exhibition is that one home, costing upwards of \$20,000, has been constructed in the residential district on the south side of the city, while the other, costing between \$8,000 and \$10,000, will be located in the residential district on the north side. In this manner, it is believed that a greater number of people of various classes will be attracted to the displays.

In deciding to exhibit the two homes, members of the club felt that the same advertising and publicity campaign which would be desirable for one home could be made to serve for two.

The work has been carried on by the Seattle Electric Club through committees composed of members and the duties have been delegated in such a manner that practically every member of the club is serving in some capacity. The committee in charge of plans and specifications, composed of engineers and contractors, has worked into the plans the best and latest practice in residence wiring. "Flexits" will be used in certain places where it is thought a rearrangement of furniture and furnishings may make the removal or change of lighting fixtures desirable. This applies particularly to the bedrooms.

A decided departure from standard practice occurs in the location of convenience outlets. Instead of in the baseboard close to the floor, these outlets are located at a height of 24 in. to 30 in. from the floor and the plates will be finished to match the interior decorations. Three and four-way switches have been liberally provided. The living room and other principal rooms have been wired with outlets for radio receiving apparatus. Electric stokers

for the furnace and electrical heat regulators will be shown. In the larger house selective ringing inter-communicative telephones are being installed.

The electrical fraternity of the city has been enlisted in making the homes as successful as possible. Harry Byrne of the North Coast Electric Company is chairman of the Electrical Homes Committee, which is directing the exhibition of the two homes.

Railroad Commission Prepares New Map of California

Marked industrial development and economic growth are graphically shown in a new map of California, just issued by the State Railroad Commission. The new map is a complete revision of the map issued by the Commission January 1, 1915. The present edition is officially of January 1, 1922.

Unusual effort has been directed toward making this map complete, and accurate as to boundary lines, township and range lines, locations of cities, towns, waterways, mountain ranges and peaks. Railroads and other transportation facilities have been given particular attention and the complete state highway system, compiled from data furnished by the Highway Commission, is shown.

In addition to the large map of the state, there are insert maps of San Francisco and vicinity, Los Angeles and vicinity, San Diego and vicinity and the city of Sacramento. These are on a larger scale of three miles to the inch, except Sacramento, which is on a scale of 4,000 feet to the inch and contains much detailed information. The street railways in these principal cities have been very carefully shown, together with many other features, notably municipal boundaries of all cities within the insert.

Copies of the map may be obtained from the commission, 870 Market Street, San Francisco. The price is \$2.50 on heavy bond paper unmounted and \$3.50 mounted on linen. Money order, check or draft should accompany the order for the map.

Underground Water Supply Found By Idaho Irrigationists

Hundreds of acres of high class land near Hamer, Idaho, are being developed by water from artesian wells which are being sunk near natural lakes.

The wells are sunk 10 feet apart, in some instances, and new wells do not diminish the flow of former ones. The necessity for sinking these wells developed from the fact that there was not sufficient water from the original project to cover all the land.

At present there are five wells, flowing about 2,000 gallons of water per minute. Others will be sunk as conditions demand. The flow from the wells is lifted by an electrically-driven pump about 10 feet, from which lift it flows by gravity to the land reclaimed.

It is expected that hundreds of acres of land will be brought under reclamation through this process.

The federal government is conducting a survey of the section to determine the source and extent of the water supply.

Banquet Introduces New Range to Northwest Dealers

The Edison Electric Appliance Company was host to seventy-five members of the electrical industry in Portland on the evening of July 12, at the Multnomah Hotel, where an elaborate dinner was served. Miss B. E. Galvin, home economist from the Edison Electric Appliance factory, introduced the new Hotpoint Hughes Super-Automatic electric range, in advance of the announcement to the general public.

Ray W. Turnbull, Northwest representative of the Hotpoint Hughes line, called attention to the many unique features of the new range and concluded by giving an excellent sales talk on electric ranges. In a few brief remarks A. C. McMicken, sales manager of the Portland Railway Light and Power Company, stressed the necessity of every one who tries to sell electric ranges, first being thoroughly sold on the idea of electric cooking themselves, and to this end each one should have an electric range in their own home.



SEATTLE ELECTRIC CLUB HAS SUCCESSFUL PICNIC

Approximately 300 members of the electrical industry of Seattle and Tacoma enjoyed the hospitality of the Seattle Electric Club at the first annual picnic of that organization on July 22 at Enumclaw, Wash. In addition to having lunch and supper at the grounds, there was a full program of sports including a baseball game between the jobbers and the representatives of the central stations, dealers and manufacturers, which the

former won, 18 to 13. There were also races, a horseshoe pitching contest and a tug-of-war between Seattle and Tacoma. The two views above show the horseshoe contest and the Seattle team winning the tug-of-war. P. M. Cole, of the Economy Fuse Company, was chairman of the committee which staged the outing. It is planned to make the outing an annual event.

Vacation Camp Built For Central Station Employees

Puget Sound Light and Power Company Dedicates Outing Place for Employees on Shores of Lake Kirkley near Seattle

Vacations without cost can now be had by the eight hundred employees of the Seattle Division of the Puget Sound Power and Light Company, following the opening of a summer vacation camp on Lake Kirkley.

Formal transfer of this camp from the company to the employees was made on July 16 by President, Alton W. Leonard and D. C. Barnes, manager of the Seattle division, to a committee of the employees headed by William Dick. This committee hereafter will have entire charge of the camp.

The idea of a summer vacation camp for all employees and their families was conceived by Norwood Brockett of the legal department of the corporation and due to his efforts the plan was brought to a successful culmination. The camp has been named Norwood Lodge in honor of Captain Brockett.

The main buildings consist of a combined dining hall and dormitory on two floors, with every convenience afforded, including running water, electric lights and other electric equipment such as a laundry, in which is located electric washers and ironers.

A common lodge, 30 by 60 ft., features a large open fireplace, a wide porch overlooking the lake and an excellent dancing floor. In addition to the two main buildings, there is an open air kitchen with a large hotel range and an open brick oven around which 10 or 15 can cook at the same time without inconvenience. The laundry and the wash room are directly back of the kitchen. Grouped about these buildings are a number of sleeping tents, each in a clump of trees to shade them from the heat of the sun.

The camp itself is built on a promontory extending into the lake and has water on three sides. The front is a fine bathing beach, protected from the sudden plunge into deep water by a boom of single logs lying out from the shore.

The development of these beautiful grounds is only begun. Plans have been drawn for landscaping the entire camp

site, leaving the tree clumps which add materially to the beauty of the surroundings. The making of lawns and the construction of a fine tennis court is now progressing.

The company provided the land and buildings with their equipment and carried on the building construction, but the employees did all of the work of preparing the grounds, laying the water mains and installing the lighting and other electrical conveniences.

The establishment of this vacation camp was made possible by the thorough and enthusiastic cooperation of company officials and executive and department heads on the one hand and the employees and their committeemen on the other. It is felt that the first stage of success has been reached with the transfer of actual control to the employees, and with the use of a maintenance fund to be provided annually by the company, that all of their plans for the development of the finest vacation camp and playground to be found anywhere may be carried out and finally realized.

Engineering Service Bureau Plans For San Francisco District

Plans for the establishment of a central employment bureau for engineers in the San Francisco Bay region have been formulated by the committee appointed by the San Francisco Engineering Council for that purpose. The matter has now been referred to the various member societies for further consideration.

The plan provides for the employment of an experienced engineer familiar with the work, to direct the bureau. Continuous follow-up work is planned, with a study of the employment situation and the business situation as it affects the work of the bureau. The following constitution and by-laws are suggested:

1. This organization shall be known as The Technical Engineers' Service Bureau of California.

2. Its membership shall be composed of the engineering societies affiliated with and known as the "San Francisco Engineering Council."

3. The objects of this central service bureau shall be to assist its members (and those not members) in securing positions or employment, to collect and disseminate information of value to the engineer, and to promote in general the welfare of the technical engineering profession.

4. It is understood that the word "members" used in the preceding paragraph shall mean such engineers as are members of or affiliated with the following:

American Society of Civil Engineers,
American Society of Mechanical Engineers,
Pacific Association of Consulting Engineers,
American Institute of Architects,
American Chemical Society,
American Institute of Electrical Engineers,
American Institute of Mining and Metallurgical Engineers,

American Association of Engineers,
and such others as may from time to time be added thereto.

Salt Lake Club Organizes New Industrial Department

The Salt Lake Commercial Club has recently organized an industrial branch, which is to be in charge of Frank C. Murphy. Mr. Murphy comes to Salt Lake City from Kansas City, where he has been assistant industrial commissioner for the North Kansas City Development League.

The purpose of the new department of the Commercial Club will be to advertise Salt Lake City and Utah as an industrial center of the West, to foster home industries and to encourage large eastern manufacturers to establish branch factories here.

The first thing which Mr. Murphy will take up will be an industrial survey of the entire state of Utah, in order to gain material for literature.

Among the information which the new department will gather will be data on city government, public utilities, financial institutions, agriculture, irrigation and drainage, geological resources, traffic, highways, tourist travel, retail establishments, wholesale houses, branch houses, manufacturers, packing houses, grain elevators and produce, labor, housing and cost of living, development of surrounding territory, factory sites and buildings, development of industries in conformity with proximity of raw materials, United States government departments, commercial organizations.



The Puget Sound Power and Light Company of Seattle recently turned over to its employees a large vacation summer camp on the shores of Lake Kirkley. The camp has been named Norwood Lodge in honor of Norwood



Brockett of the legal department, who conceived the idea. The two views above show one of the sleeping tents and the lodge, and the combined dining hall and dormitory.

Everett Electrical Home Sets Low Cost Record

Total of 8,500 Visitors See Exhibit at Cost of Approximately Nine Cents Each to Electrical Industry

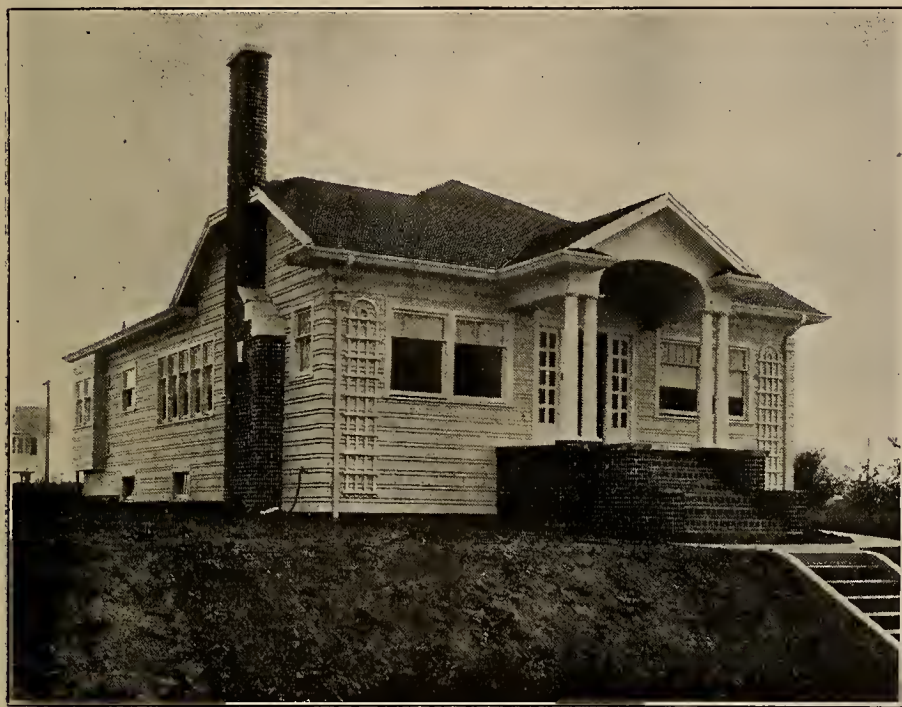
By H. S. ATWOOD
Puget Sound International Railway and Power Co.

That smaller communities can economically and effectively exhibit homes electrical was proven recently by the cooperative efforts of members of the electrical industry in Everett, Washington. This home attracted a large percentage of the city's residents and was exhibited at an exceptionally low cost.

One of the deterring obstacles in the way of all forms of cooperative effort for members of the electrical industry on the Pacific Coast has been the specter of high cost. The various cooperative organizations engaged in promoting the electrical idea and the local

made available through the cooperative interest of Dean Stephen I. Miller, Jr., of the Northwest Electrical Service League.

The committee in charge decided that there were two principal objectives to be kept in view in order to make the exhibit entirely successful. First of all, the cost of the home should be kept to the minimum consistent with a high type of display. Secondly, the people of the city and surrounding district must be thoroughly advised as to the educational nature of the exhibit and the largest possible attendance of representative residents must be obtained.



Electrical home exhibited by electrical industry at Everett, Wash., recently, which was visited by 8,500 people at a cost of nine cents' per visitor

clubs and associations have realized the problems and have stressed the need for economy at every point. The success of a comparatively small group of electrical men in the Puget Sound city should be of interest to all who are interested in the progress of the campaign to tell the public what electricity really is and what it can accomplish under a system of low overhead.

The information contained herein is in no way a challenge to other enterprises. It merely represents the result of the concerted efforts of a few enthusiasts—a result expressed in figures which obviously justifies similar cooperative endeavors.

The electrical home attracted approximately 28 per cent of Everett's population. Of a total population of about 30,000, in excess of 8,500 persons visited the display. This high attendance ratio was obtained by means of a carefully planned advertising and publicity campaign. The services of R. G. Emerson, Seattle advertising counsellor, were

The success with which the first problem was met is indicated by the low total cost of conducting the home, seven hundred and forty-seven dollars. The cost was kept to such a low figure through the coordinated efforts of those who planned and operated the exhibit. The committee in charge was composed of H. S. Atwood, Puget Sound International Railway and Power Company, LeRoy C. Jamieson, Press-A-Button Shop, T. H. Erickson and E. A. Jones. On this small group of men fell the duties and responsibilities of conducting the home electrical.

In order to properly solve the second problem, that of attracting the maximum attendance, the bulk of the expense was devoted to advertising which totaled three hundred and fifty dollars. The basis of the campaign was a series of newspaper advertisements run in each of the two daily papers. A folder with descriptive matter about the appliances and containing a model wiring plan and figures regarding the cost of

operation of electrical equipment was widely distributed.

In the publicity program, as in the case of the advertising campaign, the newspapers were used as the foundation. The mayor's proclamation of an electrical week, talks before local, civic and commercial organizations, and "write-ups" of the home itself provided material for a series of interest-creating stories.

The members of the committee feel that the success of the exhibit was guaranteed by the simplicity of the program of preparation and operation. Because only fundamentals were considered the primary objects of low cost and large attendance were reached, as evidenced by the per capita cost of the Everett Home Electrical which was less than nine cents. This may be no record in home electrical history but it may serve as the basis for a counter-attack against those who assert that homes-electrical, expositions and similar educational business builders are too expensive.

Utah Power & Light Co. Files on Green River Project

The Utah Power and Light Company has filed application with the Utah state engineer for permission to use 5,000 sec.-ft. and to develop by storage 300,000 acre-ft. in the Green river in Daggett county. With this water it is proposed to develop 188,000 hp. of electric energy for use in Utah, Idaho and Wyoming.

Plans of the company, as indicated from details given in the application, are quite extensive. The filing is in the nature of a protective one to cover rights on which filings were made in January, 1921.

The point of diversion named in the application is in Flaming Gorge canyon, which is just south of the Utah-Wyoming line where the Green River enters Utah.

It is proposed to construct a dam a short distance down the stream, the water from this dam to be backed up well above the proposed diversion point. From the latter point a pressure tunnel 19,800 ft. long would extend, according to the application, in a southeasterly direction, emptying into the Green River again in Red canyon at a point some miles downstream. The pressure tunnel is to be 25 ft. in diameter. It is to deliver water to five wheels, each 66 in. in diameter measured from runner to runner, and of the reaction type. These wheels are each capable of producing 37,600 hp., according to the application, when operated under the proposed head which would vary from 415 to 350 ft.

W. G. Swendsen, Idaho commissioner of reclamation, has approved the formation of the Boise Valley irrigation district. The majority of the land in this district is located in Canyon county. The total acreage in the proposed district is 103,000 acres, and embraces all the land in the Boise-Payette reclamation project not already formed into districts. The purpose of forming this district is to create an operating organization. There are two districts now on the project, the Meridian and the Nampa irrigation districts, embracing 40,000 acres.

Denver Cooperative League Plans For Coming Year Announced

Following a year of activity during which the most important accomplishment was the successful staging of an electrical home, the advisory committee of the Denver Electrical Cooperative League has issued a report covering the progress which has been made by the organization and the plans which have been worked out for the future activities, chief among which is the extension of work into such territory outside of Denver as can be served profitably by the electrical industry of that city.

In reviewing the progress of the League during the first year of its operation, the report emphasizes the following three things:

The establishment of a spirit of mutual helpfulness and understanding within the entire industry.

A marked increase of interest on the part of the public in electrical matters, especially improved wiring plans and their resulting conveniences.

A higher standard and plane of operation for all the component branches of the electrical industry.

In outlining the work which will be undertaken during the coming year, and for which an estimated budget of \$20,000 has been drawn up, the report includes the following in its program:

1. The continuation of the educational campaign for the betterment of the industry.

2. The enlargement of the League staff to work with each branch of the industry throughout the territory, and to help in the solution of the individual and mutual problems confronting all members of the League.

3. The development of team work throughout the industry by "get-together" meetings, entertainments and athletic contests.

4. The further development of service to the public through a bureau of electrical information.

5. The establishment of more electrical homes in the most advantageous places in the territory.

6. The development of a course of instruction, lectures, and exhibits on commercial and industrial lighting.

7. The cooperation with builders, architects, city officials and others in the improvement and enforcement of the electrical code.

8. The more general dissemination throughout the industry of information on problems primarily concerning central power stations but which are of vital concern to all.

9. The education of the purchaser of electrical service and merchandise to the value of the League emblem to them, viz.:—to indicate that anyone entitled to its use is reliable and responsive, and that it represents the highest class of service, workmanship and materials.

10. The extension of the work of the League to such other territory outside of Denver as can be served profitably to the industry so that every branch of the electrical business will become more closely united for the good of all.

Westinghouse Gets Order From Washington Paper Co.

The Westinghouse Electric and Manufacturing Company has recently received an interesting order from the Washington Pulp and Paper Corporation, Fort Angeles, Washington.

The order includes one complete sectional individual motor drive for a 164-inch Bagley-Sewell Foudrinier newsprint paper machine for paper production speeds of 400 to 1200 feet per minute, including a 600 kw. synchronous motor generator set, nine section motors and gear units, and control equipment; three 1000 hp., 240 r.p.m. synchronous motors for driving pulp grinders; one 200 kw. synchronous motor exciter set for pulp grinder motors; one 3330 kv-a., 300 r.p.m. vertical waterwheel type generator with direct connected exciter and one 2'00 kv-a., 120 r.p.m. engine type a.c. generator.

The apparatus ordered from the Westinghouse Company will be used for increasing the capacity of the plant, which was built four years ago and is one of the most modern on the Pacific coast.

Building Permits for Denver Show Marked Increase for 1922

A marked increase in building activities in Denver for the first seven months of the current year is shown in a report made public by Frank M. Ladd, city building inspector.

With the addition of the permits issued during the month of July the total for the current year to date is now \$10,329,275, which is some \$4,600,000 in excess of that for the same period of 1921.

The total amount of the permits issued for the first seven months of 1921 was \$5,689,525.

During July this year permits issued total \$1,097,275 as compared with \$740,850 for the same month of 1921, \$365,425 less than for the past month.

Permits issued last month numbered 620, which was an increase of sixty-seven over those of July of last year.

Vancouver Electrical Home to Be Opened September First

The first electrical home to be staged in British Columbia will be opened at Vancouver on September first for a period of three weeks under the direction of the British Columbia Electrical Service League, provided that present plans are carried through.

The home, which is located on Twenty-ninth avenue, half a block west of Granville street, in Shaughnessy Heights, has been built on a cooperative plan, financed by Messrs. Rush and Reed, a contracting firm.

The operation and advertising of the home will be taken in hand by the Electrical Service League of British Columbia.

Before it is thrown open to the public for inspection, the electrical home will be completely furnished and decorated, so as to give the appearance of an ordinary home in use.

There will be 197 electrical outlets of all descriptions—switches, lights, baseboard convenience outlets, etc. The kitchen will be furnished with an electric range, water heater and dish-washing machine, and the laundry with a washing machine, ironing machine and clothes dryer. Intercommunicating telephones and an annunciator system will be installed. There will be outlets for radio sets in the den and living-room.

Another feature will be the master control switch at the bedside in the owner's bedroom, which controls four outside lights and nine inside lights as a burglar alarm.

All closets will be fitted with automatic switches, operating on the door hinges. In every room there will be full equipment of baseboard outlets. Three electric glow logs will be installed in fireplaces.

The electrical equipment, while complete, will not be overdone. In fact, the home will be fitted up in an entirely practical way, within the reach of anyone building a moderately priced house.

It is expected that 10,000 persons will visit the home during the exhibition.

N. E. L. A. President Sees Menace in California Power Bill

In a recent speech before the Twenty-eighth Annual Convention of the Ohio Electric Light Association at Cedar Point, Ohio, President Frank W. Smith of the National Electric Light Association pointed out how the success or failure of the proposed \$500,000,000 California Water and Power Act may have a vital effect on the central station industry of the entire nation.

In his address, President Smith said:

"You are all familiar with the proposed California Water and Power Act, on which the voters of the state of California are to be asked to make a decision next November. Recognizing that this proposal was a direct attack against private enterprise, the Association, in contending against the proposed Act, feels that it is not fighting alone for the state of California, but is contending for the rights of every privately owned electrical utility in the country, and in a larger sense, for all private initiative and enterprise, whether it be engaged in public utility work or in private business, for if the state shall seek to socialize one form of business which is being conducted with so much benefit to the people of the great West, as the business of the electric light and power companies is, it will soon reach into other lines of endeavor, with disastrous results to private initiative and enterprise.

"The Water and Power Act proposed in California is patterned after that of the Hydro Electric Power Commission of Ontario. This system has been repeatedly cited as the most successful example of government ownership and operation in the western hemisphere. There has never been any doubt in the minds of persons conversant with the facts that the service rendered by the electric public utilities in the United States under private management and under proper regulation is better, more dependable and less expensive than service rendered by municipally owned or state owned utilities."

Expenditures for Western Harbors for 1922 Announced

Approximately \$3,000,000 will be spent on the improvement of western rivers and harbors under the direction of the U. S. Corps of Engineers during the next fiscal year, according to an announcement from Washington, D. C.

During the current fiscal year the Corps of Engineers will expend the following sums on river and harbor projects in the West: Los Angeles Harbor, \$500,000; San Francisco Harbor, \$10,000; Oakland Harbor, \$100,000; Richmond Harbor, \$100,000; Petaluma Creek, \$50,000; Humboldt Harbor and Bay, \$250,000; San Joaquin River, \$33,000; Stockton and Mormon channels, \$10,000; Sacramento River, \$95,000; Yuba River debris, \$30,000; Coos Bay, \$150,000; Coos River, \$3,000; Yaquina Bay and Harbor, \$300,000; Columbia River, between Celilo Falls and the Snake River, \$12,500; Snake River, \$10,000; Clatskanie River, \$6,200; Willamette River, above Portland, \$27,300; Lewis River, \$17,700; Cowlitz River, \$11,000; Columbia and Lower Willamette, below Vancouver and Portland, \$850,000; Willapa River and Harbor, \$265,000; Grays Harbor, \$36,000; Puget Sound, \$30,000; waterway connecting Port Townsend and Oak Bay, \$10,000; Lake Washington ship canal, \$40,000.

The Washington Radio Trades Association recently held an organization meeting, when plans of a committee recommending permanent organization were adopted, and the following officers elected: president, Frank U. Bliss; vice-president, C. F. Jefferson; secretary-treasurer, L. C. Warner; executive committee: C. L. Stevens, E. O. Munson and E. P. Denham.

Meetings of Interest to Western Men

Rocky Mountain N. E. L. A. to Meet at Glenwood Springs

The annual joint convention of the Rocky Mountain Division, National Electric Light Association, and the Colorado Light, Power and Railway Association, will be held at the Hotel Colorado, Glenwood Springs, Colorado, on Monday, Tuesday and Wednesday, September 11, 12 and 13.

Chief among the speakers on this occasion will be J. E. Davidson, general manager of the Nebraska Power Company, and vice-president of the N. E. L. A.; Ben S. Read, president of The Mountain States Telephone and Telegraph Company, Denver; P. L. Thomson, general advertising manager for the Western Electric Company; Jas. C. Burger, Denver banker, and others from various parts of the country.

There is every indication that this will be one of the largest, if not the largest convention ever held in the state. It is urged that immediate reservations be made direct from Mr. Lucas, manager of the Hotel Colorado. It is needless to state that Glenwood Springs is one of the most beautiful spots in the state.

Chairman A. C. Cornell and other members of the program committee are perfecting plans for plenty of sport, fun, and amusement for the ladies as well as the men, thus assuring all who attend something more than "all work and no play."

Numerous matters of extraordinary importance and interest will come before the convention this year. Practically every phase of the utility industry will be touched upon by one speaker or another. E. P. Bacon is president of the N. E. L. A. division, while Fred Norcross heads the other association.

The committees appointed, and their personnel, follow:

Program Committee—E. A. Phinney, chairman, Norman Read, W. C. Sterne, C. A. Semrad, V. L. Board.

Transportation Committee—E. A. West, chairman, D. C. McClure, J. J. Cooper, L. M. Cargo.

Entertainment Committee—A. C. Cornell, chairman, B. C. J. Wheatlake, G. E. Lewis, J. C. Davidson, J. F. Greenawalt.

Invitation Committee—H. D. Randall, chairman, J. F. Dostal, W. F. Raber.

Program for Contractor-Builder Convention Announced

The official program for the annual convention of the California State Association of Electrical Contractors and Dealers, which is to be held at Santa Cruz, August 18 and 19, has been announced from the headquarters of the association. The program follows:

August 17

Executive Committee Meeting, 8 p.m.

August 18

10 a.m.—Contractor-Dealer Session.

2 p.m.—Some New Things from the Lighting Field.

August 19

9-11 a.m.—Discussion and Interpretation of the Proposed Electrical Safety Orders.

11 a.m.—State Railroad Commission's General Order No. 64. Presentation by representative of California State Railroad Commission.

1:30 p.m.—Contractor-Dealer Session; election of officers, reports of committees, etc.

3:00 p.m.—Motor Dealers' Session.

6:30 p.m.—All-Together Dinner.

Western Engineer Suggested As Institute Head

The name of Harris J. Ryan, professor of electrical engineering and head of the experimental laboratory of Stanford University, and internationally known electrical engineer, has been suggested as a candidate for president of the American Institute of Electrical Engineers for the year beginning August, 1923. The suggestion was made at the Pacific Coast Convention of the Institute at Vancouver, B. C., August 8-11. The suggestion received the unanimous and enthusiastic endorsement of all Pacific Coast sections.

Utah Irrigation Congress Holds Fifth Annual Session

The fifth annual session of the Utah Irrigation and Drainage Congress was held at Logan, July 27 and 28. President F. H. Harris of Brigham Young University presided.

At the first morning session Professor Orson W. Israelson of the Utah Agricultural College talked on "The Relation of Irrigation and Drainage," in which special attention was given to the causes and preventive measures of water-logging. Professor Israelson pointed out the undesirability of porous canals and farm ditches, and recommended canal lining and cleaning of ditches.

Joseph R. Murdock, one of the most prominent irrigation experts in the West, gave a ten-minute discussion of "The Future of Reclamation Development in Utah." He pointed out that there are thousands of acres of land in the counties of northern Utah yet to be drained and utilized for agricultural purposes. He also cited instances where good work along this line is now being accomplished in various parts of the state.

W. R. Wallace, of the Utah Water Storage Commission, talked on "The Work of the Utah Water Storage Commission." He explained various plans yet to be put in practice for the storing and saving of water supplies for Utah.

R. A. Hart, Sr., engineer of the western division of the U. S. Department of Agriculture, opened the second day's session with an interesting talk, in which he went into considerable detail regarding the financing of drainage districts, both from the standpoint of the farmer and that of investor. He spoke of the vast amount of work yet to be done in the way of reclamation.

Dr. Joseph E. Greaves of the Utah Agricultural College discussed alkali and non-alkali soils, with special emphasis on the methods of removing alkali and the treatment of soils after the alkali has been removed.

C. G. Adney of Corinne, Utah, talked on drainage. He urged the drainage of land before it goes bad, as irrigated land will surely do sooner or later if not drained.

Dr. John A. Widtsoe, former president of the Utah Agricultural College, called attention to the very great value of utilization of irrigation in this section. "Irrigation must be our hope," he said. "In this connection we must not entertain the thought that our agricultural resources are already utilized. By proper utilization we might increase our yield from irrigation areas by 50 per cent, and might double our irrigation with water we already have."

COMING EVENTS

CALIFORNIA STATE ASSOCIATION OF ELECTRICAL CONTRACTORS AND DEALERS

Annual Convention—Santa Cruz—August 17-19, 1922

SOUTHERN IDAHO ASSOCIATION OF ELECTRICAL CONTRACTOR-DEALERS

Annual Convention—Hailey, Idaho—August 25-26, 1922

ROCKY MOUNTAIN DIVISION, N. E. L. A.

Annual Convention—Glenwood Springs, Colo.—September 11-13, 1922

COLORADO ELECTRIC LIGHT, POWER AND RAILWAY ASS'N

Annual Convention—Glenwood Springs, Colo.—September 11-13, 1922

INVESTMENT BANKERS ASSOCIATION OF AMERICA

Annual Convention—Del Monte—October 7-11, 1922

Everett, Wash., telephone users will continue the use of telechronometers until the department of public works at Olympia has completed its investigation, fixed the valuation of the Puget Sound Telephone Company and determined rates that should be charged for measured talk, according to an order recently entered by the department denying the motion of the city of Everett to discontinue the use of the meters. Telephone subscribers numbering 159 petitioned the department to continue the use of the telechronometers, and the department also found that the majority of subscribers were paying less for the measured service than they had been paying under the old flat rate system, according to data on 60 days' use of the machines.

Dr. William T. McClellan, retiring president of the American Institute of Electrical Engineers, was one of the most active figures at the Pacific Coast convention of that organization at Vancouver where he delivered the presidential address, his last official function. In connection with his visit to the West, he addressed gatherings of engineers and business men at Spokane, Seattle,



WILLIAM T. MCCLELLAN

Portland, Salt Lake City and Denver. Mr. McClellan was educated at the University of Pennsylvania with the class of 1900 and received the degree of E.E. in 1913. Following his graduation he was employed with the Philadelphia Rapid Transit Company engaged in all forms of railway and construction work and later became engineer in charge of construction. He left that company in 1905 to go to New York with Westinghouse, Church, Kerr and Company and was later one of the managing engineers of this firm. In 1917 he became associated with H. T. Campion of Philadelphia in construction engineering, which association has been maintained until the present time.

Henry T. Hall of Salt Lake City has assumed the management of the Uintah Light and Power Company of Roosevelt, Utah. For the past eight years Mr. Hall has been associated with the General Electric Company.

C. B. Hall, president of the Illinois Electric Company, has just returned from a month's visit to the East where he took in the National Jobbers' Association and the Westinghouse Agent Jobbers' Association meetings at Hot Springs, Virginia.

A. A. Brown, manager of syndicate operations and assistant to the vice-president of the Westinghouse Electric and Manufacturing Company, recently inspected the Rocky Mountain office of that company on his way to the Coast. On his visit to Salt Lake City he was accompanied by L. M. Cargo, territory manager, and J. P. Sprunt, Jr., head of the supply department of that company, both with headquarters in Denver.

E. D. Stewart, branch manager of the El Paso office, J. H. Knost, branch manager of the Tucson office, and J. H. Fenton, manager of the industrial department of the Los Angeles office, all of the Westinghouse Electric and Manufacturing Company, are in Salt Lake to attend a conference of the Westinghouse employees who handle mining territory in the West.

Personals

Carl D. Jackson, chairman of the Wisconsin Railroad Commission, and president of the National Association of Railway and Utility Commissioners, paid a visit to Salt Lake City during July.

P. Mathison has recently been assigned to the San Francisco district of the Westinghouse Electric and Manufacturing Company as switchboard specialist. Mr. Mathison has been associated with the Westinghouse interests for fifteen years, entering the East Pittsburgh works in 1903 as an engineering apprentice, after graduating from Toronto University as an electrical engineer. From 1906 to 1912 he was switchboard engineer for the Canadian Westinghouse Company at Hamilton, Ontario. Returning to East Pittsburgh in 1914, he was employed on project work in the switchboard division of the engineering department.

Walter H. Seaver, sales manager of the wire products department of the U. S. Steel Products Company of San Francisco, is in Los Angeles on a business trip, looking after the interest of his department.

O. J. Orear, former manager of the Mason City, Iowa, branch of the Julius Andrae Company of Milwaukee, has recently joined the sales organization of the Illinois Electric Company and will handle the Westinghouse industrial line for that company.

George Hemmon, formerly with the sales department of the B. K. Sweeney Electrical Company, recently resigned his position with that company to enter business in San Francisco.

W. S. Berry, sales manager of the San Francisco office of the Western Electric Company, Garnett Young, general manager of Garnett Young and Company, C. C. Hillis, vice-president and treasurer, Electric Appliance Company, San Francisco, H. H. Courtright, president, Valley Electrical Supply Company of Fresno, George Bigelow, assistant general agent, Southern Sierras Power Company of Riverside, R. E. Fisher, vice-president in charge of sales, Pacific Gas and Electric Company of San Francisco, and Robt. L. Eltringham, manager, California Electrical Co-operative Campaign, were in Los Angeles attending the monthly meeting of the Advisory Committee of the California Electrical Co-operative Campaign.

E. F. Scattergood, chief electrical engineer of the Bureau of Power and Light, City of Los Angeles, has just returned from a five weeks' trip to Washington, where he was a delegate on behalf of the Swing-Johnson Boulder Canyon Bill.

E. E. Valk, Los Angeles engineer of the General Electric Company, has just returned from a six weeks' trip in the East visiting the General Electric Company's factories in Schenectady and other eastern points.

F. H. Ensign of the New State Electric Supply and Fixture Company, Phoenix, Arizona, is spending a month in southern California with headquarters at Long Beach.

E. M. Mackey, manager of the electrical department of the El Paso, Texas, branch of the Mine and Smelter Supply Company, was a visitor at the home office of the organization at Denver recently.

R. E. Caldwell, Utah state engineer, has recently returned to Salt Lake City following a conference in Denver with A. P. Davis, director of the United States reclamation service, and F. W. Weymouth, chief engineer of the service, over details of the survey of the irrigation and power possibilities of the Great Salt Lake and Dead Man's bench projects. Both the state of Utah and the reclamation service will each contribute \$15,000 for further investigation of these projects as the result of a contract drawn up by Mr. Caldwell and the reclamation service officials.

Thomas W. Rolph has been appointed managing engineer of the scientific street lighting department of the Holophane Glass Company, Inc., of New York. Mr. Rolph has been with the company since 1907 with the exception of the years 1913 to 1920 when he was with the General Electric Company.

Gerard Swope, president of the General Electric Company, has just been elected a fellow in the American Institute of Electrical Engineers. Fellowship is the highest grade of membership and is characterized by the stipulation that the president of the Institute is to be chosen only from among the fellows.

M. W. Scanlon has recently been assigned to the San Francisco office of the Westinghouse Electric and Manufacturing Company as director of publicity and sales promotion for northern California and Nevada. Mr. Scanlon received his education at the College of Wooster (Ohio) and the University of Pittsburgh. For three years following his graduation he taught mathematics and science in the high schools of Pittsburgh. Previous to joining the Westinghouse forces he spent six months with the Chevrolet Motors Company.



M. W. SCANLON

He entered the house organ section of the publicity department of the Westinghouse company in October, 1920, and later was transferred to the merchandising section editing "Contact," the company's house organ. He was placed in charge of the merchandising section in December, 1921, and held that position until his transfer to the San Francisco office.

Anson W. Burchard, vice-chairman of the board of directors of the General Electric Company, has been elected president and chairman of the board of the International General Electric Company.

H. D. Shute, vice-president and general sales manager of the Westinghouse Electric and Manufacturing Company, has been elected a member of the board of directors of the Standard Underground Cable Company, Pittsburgh, Pa.

James E. Blackwell, former superintendent of buildings for the city of Seattle, has resumed general practice of architecture and consulting engineering, with offices in the Hoge Building Annex. Mr. Blackwell in his work specializes in power stations, docks and drydocks, and has built a number of important projects in the Puget Sound country.

H. Birchard Taylor, president of the Pelton Water Wheel Company and vice-president of the William Cramp and Sons Ship and Engine Building Corporation of Philadelphia, is in San Francisco visiting the Pelton works. This is Mr. Taylor's first visit to the Pacific Coast and to the main works of the Pelton company since the acquisition of the control of that organization by the Cramp interests. Mr. Taylor is accompanied by Lewis F. Moody, hydraulic engineer of the parent concern.

Hylom T. Plumb, of Salt Lake City, has been elected vice-president of the American Institute of Electrical Engineers for the Ninth District. He is also president of the Engineering Council of Utah. Mr. Plumb is intermountain engineer of the General Electric Company at Salt Lake City. He has been with this company for the past twelve years, the first two years of which he spent at the Denver office. Prior to that he was professor of electrical engineering at Purdue University, and at other eastern institutions. As an engineer, teacher, writer and lecturer he is well



HYLOM T. PLUMB

known in this country. He is especially gifted in presenting popular lectures on scientific subjects. Mr. Plumb is a graduate of Milton College and of the University of Wisconsin. He has been very active in Institute affairs, and was general chairman of the 1921 A. I. E. E. convention committee which so successfully handled the Salt Lake City convention.

Oliver Sheba of the engineering department of the Southern California Edison Company, together with a party of business men of Fresno, California, recently conducted an expedition across the high Sierra as a foundation for a campaign for state and national aid to complete the Roosevelt National Highway across Piute Pass, the highest pass in America to be crossed by a roadway.

A. B. Saurman, general sales manager of the Standard Underground Cable Company, Pittsburgh, Pa., has been elected a vice-president of the company and will combine the duties of his new office with those of general manager of sales.

C. J. Blanchard, assistant director of the United States Reclamation Service, was a recent Salt Lake visitor en route to inspect various projects in Idaho in which the government is interested.

George Campbell, general manager of the Truckee River General Electric Company with headquarters at Reno, Nev., has recently visited San Francisco and other California cities.

Frank B. Chapman has recently been appointed eastern sales manager of the Bryant Electric Company of Bridgeport, Conn., succeeding George V. W. Ingham, who has resigned. Mr. Chapman's experience embraces nearly thirty years devoted to the electrical industry.

E. A. Sherman, associate forester of the U. S. Forest Service, recently left Seattle for a two-months' trip through Alaska to make a field study of departmental problems. There are twenty million acres of national forest lands in Alaska and Mr. Sherman's trip will take in the greater part of these holdings.

S. W. Bishop, executive manager of the Electrical Cooperative League of Denver, was a member of the reception committee which entertained Hanford MacNider, national commander of the American Legion when he visited Denver July 15th.

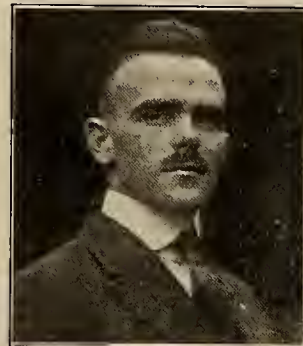
A. M. Jackson, chairman of the Rocky Mountain Electrical Exposition committee, is now in the East making a number of calls on the most important manufacturers in connection with the electrical exposition to be held in Salt Lake City, October 2 to 14. His itinerary will include New York, Boston, Philadelphia, Baltimore, Rochester, Syracuse, Buffalo, Pittsburgh, Detroit, Cleveland, Toledo, Dayton, Chicago and a number of towns in Connecticut. During his absence P. M. Parry, commercial manager of the Utah Power and Light Company, will act as temporary chairman of the Exposition executive committee.

H. M. Ferguson, manager of the Salt Lake division of the Utah Power and Light Company, has returned to Salt Lake City after a visit of six weeks in New York and other eastern cities.

E. L. Andrew of the publicity department of the Westinghouse Electric and Manufacturing Company, is visiting the principal cities of the West in the interest of a special advertising campaign which his company is desirous of promoting in conjunction with agent-jobbers and contractor-dealers.

William Bradshaw, designing engineer of the Westinghouse Electric and Manufacturing Company with headquarters in East Pittsburgh, Pa., spent some time recently on the Pacific Coast, largely in and about the San Francisco Bay region.

J. C. Douglas, range expert, has been placed in charge of the range, hotel and restaurant equipment department of the Edison Electric Appliance Company, Inc., to fill the vacancy caused by the resignation of B. Y. Gibson. Mr. Douglas has had a great many years' experience in the distribution of ranges, having formerly been in charge of the range sales department of the Hawai-



J. C. DOUGLAS

ian Electric Company at Honolulu. Previous to that time he was with the Pacific States Electric Company at the San Francisco office of that concern. The West, with its abundance of cheap hydroelectric power, furnishes one of the greatest fields for the use of electricity in cooking. Great progress has been made, not only in the introduction of the electric range into the home, but also into hotels and restaurants. In his new position, Mr. Douglas will have charge of the distribution of the Hotpoint Hughes range throughout California, Nevada and Arizona.

C. R. Rudy, formerly sales manager of the Colorado Power Company, has been appointed secretary and sales manager of the Meyer Pulp and Paper Company, an eastern organization which is building a million dollar plant near Denver.

George Lewis, executive manager of the Rocky Mountain Committee on Public Utility Information, addressed the midsummer meeting of the Colorado Editorial Association at Pueblo, Colorado, July 21, and gave a talk on "Advertising Newspaper Advertising."

Obituary

David D. Faris, manager of the marine department of the Westinghouse Electric and Manufacturing Company, died suddenly in his office at the East Pittsburgh works of the company on July 10. Mr. Faris had been with the company since 1904, and had risen from the position of stenographer to departmental manager during that period.

Louis B. Roberts, veteran secretary of the Denver Association of Electrical Contractors and Dealers and a resident of Denver for 43 years, died of paralysis July 31. He was 72 years old.

The Edison Lamp Works of the General Electric Company, Harrison, N. J., has recently revised and issued a number of Lighting Data Bulletins. The following bulletins are affected: "Maintenance of the Lighting System," "Effect of Color of Walls and Ceilings on Resultant Illumination," "Lighting of Show Windows and Show Cases," "Artificial Daylight in Merchandising and Industry," "School Lighting," and "Calculation of the Lighting Installation."

The Allis-Chalmers Manufacturing Company, Milwaukee, Wis., has just issued Bulletin No. 1123, entitled "Small Steam Turbines." The booklet describes that type of turbine used to drive condenser auxiliaries, exciters and small generators. The text is illustrated with a number of diagrams.

The Western Electric Company's Portland branch will have a new home upon completion of a three story brick building to be erected immediately for its exclusive use at the corner of Park and Flanders Streets. The structure will cost \$35,000 and will be ready for occupancy the latter part of August.

The Kyle Electric Company has been incorporated at Pueblo, Colo., with a capitalization of \$10,000 by J. S. Cowan, A. M. Cowan and others.

The Electric Maid Shop, of Portland, has moved to new and more spacious quarters on Alder St. between Fourth and Fifth Streets. This shop specializes in household conveniences and appliances and now has a neat and tastily arranged store in the center of the retail district for the display of its goods.

The Cutler-Hammer Manufacturing Company, Milwaukee, Wis., announces that flush type switch and receptacle plates may now be obtained in the Brush Lac finish perfected by that company. The finish looks like brush brass, is neat durable and considerably less expensive. The finish reduces the cost of the plate nearly fifty per cent.

The Poole Electric Company, operating stores in Seattle, Tacoma and Olympia, is opening another store in Aberdeen, with Fred Anderson as manager.

Norman B. Jensen will open a new electrical supply store at Sierra Madre, California.

Edward Zeiher and Albert Zeiher are opening a new electrical store at Kemmerer, Wyoming.

Jack Perrin has opened a new store at 104 East Queen Street, Inglewood, California, where a full line of electrical supplies will be carried.

J. B. Caro and G. L. Madson are featuring a full line of electrical appliances at 15 Stevens Street, Spokane, Washington.

The Kyle Battery and Electric Co. is reported to have opened an electrical supply business at Pueblo, Colorado with an incorporated capital, \$10,000.

The Pacific Electric Company, Inc., Aberdeen, Wash., will open a branch store in Hoquiam. A. E. Hunt is the general manager of the company.

The Western Radio Sales Company has opened offices in the McIntyre Building in Salt Lake City. The company will distribute the products of the Radio Corporation of America, together with Westinghouse and General Electric radio equipment throughout the Intermountain district. Offices will also be maintained in Ogden, Butte, Reno, Boise, Denver and Cheyenne.

Manufacturer, Dealer, and Jobber Activities

The Johns-Pratt Company of Hartford, whose selling arrangements through the Johns-Manville Company were recently dissolved, has established a Pacific Coast branch. This office, located in the Call Building, New Montgomery Street, San Francisco, will be in charge of A. J. Moan. Mr. Moan was with Johns-Manville Company for a number of years and is therefore entirely familiar with the Johns-Pratt line of fuses and protective devices, packing and molded insulation. To facilitate deliveries on the Pacific Coast, a comprehensive stock of all lines will be carried at San Francisco.

The F. W. Wakefield Brass Company, Vermilion, Ohio, manufacturers of "Red Spot" lighting specialties, has recently received notification to the effect that Holophane Glass Company of New York has standardized on "Red Spot" hangers for both ceiling and suspension units.

The Sprague Electric Works of the General Electric Company has issued Bulletin No. 48718 describing the Sprague electric dynamometer chassis test for motor car manufacturers, service stations and public garages. The dynamometer also has auxiliary equipment for direct engine testing.

The Killark Electric Manufacturing Company, St. Louis, has perfected a new popular priced radio set which it is preparing to place on the market.

The set consists of a tuning coil with sliders, a fixed condenser and a crystal detector. The only additional equipment needed is a ground wire, antennae and head phones. The set will receive messages broadcasted within a distance of 25 miles from the receiving station.

The Brascolite Company Division of the St. Louis Brass Manufacturing Company, of St. Louis, has issued catalog No. 9, describing the various Brascolite fixtures. Also included in the new catalog are descriptions of the more recent Industrolite, Aglite and E-lite. The catalog is most attractively done, a number of the illustrations being in colors. It will be sent to dealers upon request.

The Allis-Chalmers Manufacturing Company has issued Bulletin No. 1124 describing the synchronous motors manufactured by that company. In addition to going into the details of motor construction there are many photographs of actual industrial installations. The bulletin also contains some interesting data on the use of synchronous motors for improvement of power factor.

The Mechanical Appliance Company, Milwaukee, has placed on the market a new line of Watson a.c. multi-speed motors which provide for speeds of 600, 720, 900 and 1200 r.p.m. With the injection of the new speed step, speeds approaching the performance of a d.c. motor with speed variation by field control are made possible. The motor is made in either constant horsepower or constant torque with any combination of speeds for 60-cycle circuits. The same ratings will be furnished for other frequencies and likewise two-phase.



YOU KNOW WHAT THE GOVERNOR OF NORTH CAROLINA SAID—

It is seldom that we are given the opportunity of printing a picture of such an illustrious gathering as the above. Governor Davis of Idaho is giving T. E. Bibbins, president of the Pacific States Electric Company, a lecture on golf etiquette, while Mrs. Bibbins listens. Included in the Governor's remarks were probably the following: "Never pick up your ball until it stops rolling. Always kick your opponent's ball into a sand trap whenever you get a chance. When your opponent accidentally shoots into the rough always remark, 'Hard luck, old man. Thank goodness!'"

Business Outlook in Western Market Centers

Reflecting the Trend of Community Thought on Conditions and Events Affecting Business and Industrial Activities Throughout the West

Compiled and edited for the Journal of Electricity and Western Industry by correspondents in all principal Western cities.

SPOKANE

Business conditions considered as a whole are good. The surplus of money in the banks has not been so large since 1917 and savings accounts showed an increase for July. The lumber business is good, almost booming. All mills are running, many of them two shifts and the demand is equalling if not exceeding the output in many cases. Price advances are predicted with a continuation of present conditions.

Mining is good and getting better. A large number of mines and prospects are operating and the larger properties complain that they cannot get enough miners. The Bunker Hill and Sullivan Mining and Concentrating company which intended to blow in a second furnace at its smelter at Kellogg early in July could not do so for shortage of experienced men.

House building operations in Spokane continue to exceed all records for more than 10 years. This has a bad side, in that it has made it difficult to sell the older houses and real estate men are complaining.

PORTLAND

With over three months of very dry weather the forest situation throughout the Northwest is growing worse daily. Most of the fires have been in the state of Washington where millions of dollars of damage has been done.

Although July is normally a quiet month in building construction the value of permits issued in Portland during July of this year exceeded in value those of last year by more than 25 per cent.

The railroad strike so far has had very little effect on industry and business in this section. If the strike continues, however, it is probable that business will suffer.

Electrical jobbers, contractor-dealers and central stations find business very satisfactory and predict a steady improvement during the fall and winter.

LOS ANGELES

Los Angeles ranked third among the cities of the United States in building for the first six months of 1922 with an amount of \$59,459,250.00, being led by only Chicago and New York City. Building activity for the month of July, though not as high as the preceding three months shows a gain of almost 50 per cent in valuation as compared with July 1921. During the month the total number of building permits issued was 3,393 with an estimated valuation of \$8,064,018.

Bank clearings for the month of July amounted to \$426,580,859.39, which is

an increase of approximately 30 per cent over July 1921.

The electric supply business continues to be good owing to the large amount of building and the manufacturers of large apparatus continue to report sales. The electric retail business has held up well during the unusually dull summer months, but there has been a marked decline in the sale of radio apparatus.

Plans are practically complete for California's Pageant of Progress and Industrial Trade Exposition as sponsored by the Los Angeles Chamber of Commerce, which is to be held August 26th to September 9th inclusive.

SALT LAKE CITY

The reports of the U. S. Geological survey for the first half of 1922, covering Utah and adjoining states, show that metal mining in all these states is experiencing a decided revival after a year or more of stagnation such as the industry has never before experienced. Metal prices are increasing gradually, freight rates have been reduced, and labor conditions are better than for some time.

Building activity in the larger towns continues unabated. In Salt Lake City particularly there is a sharp demand for homes. Electrical contractors and dealers are receiving a fair volume of business on this account, and are making intensive efforts to educate the home-builder to the advantages of a greater use of electricity in the home.

In various lines of retail trade business is generally fair, with collections slightly improving. Dealers in lumber and building materials report a good business.

Crop conditions are good. Sugar factories are getting ready for their fall campaign on sugar-making, with prospects of a good crop of sugar beets.

SEATTLE

Forest fires of a serious nature continue to hamper logging in all parts of the Pacific Northwest, and a number of camps have closed down by order of the State Forestry Department. As a result stocks on the West Coast are lower than for many months past, and there will be no appreciable replenishment until after a heavy rainfall, permitting camps to resume.

Building operations throughout the state have resumed on such a scale that there is claimed to be a shortage of sand and gravel, which is embarrassing the highway division in its paving program this summer. A labor shortage is also reported in many lines of industry, particularly on highway work and in farming sections. The apple harvest will absorb thousands of workers for at least two months, and the employ-

ment problem is in very satisfactory condition at present.

Retail trade has been fairly brisk during the past two months, stimulated, no doubt by the interest created in Northwest products through the big merchants' convention during the month of July, with consequent extensive advertising of all local products.

DENVER

In a report on business conditions in this city and the district tributary to it John C. Mitchell, president of the Denver National Bank, says:

"General crop conditions are better than last year though the sugar beet acreage is 25 per cent less. Retail business is fair. Jobbing and wholesale transactions show fair increase. Merchandise stocks are low. Credits are fairly well liquidated in both city and country. Live stock is in good condition, with prices good.

"General labor conditions are good, few idle. Rail and coal labor, considering strikes, are fair and quiet at present. Coal output is 20 per cent more than sixty days ago.

"Denver bank clearings for July 1922 totalled \$128,457,418, an increase of \$20,513,543 over the same period a year ago. Deposits are increasing.

"Permits for building in city for first seven months of year show increase of nearly five million dollars over same period last year. Total value of permits to date \$10,329,275 with \$1,097,275 credited to July, residence permits representing major portion."

SAN FRANCISCO

What would be an extraordinarily good summer business season is now more or less disturbed through apprehension felt as to how long the coal and rail strike will continue. There are reports of reduced production in certain lines, and the feeling is that after the rail strike is settled there will be difficulty in getting shipments through. Delays are now numerous, cars difficult to obtain, because the effectiveness of the railroad engine power is declining. Orders for fall merchandise have been large, crop conditions being favorable, and the country districts have been expected to come back strong. This has caused firmer prices in foodstuffs and in many commodities, but commitments the past week have shown a falling off, due to the uncertainty in national affairs.

Fundamentally conditions are favorable for continued better business, and with more settled conditions again prevailing the lull will be but temporary.

Construction News and Industrial Developments

Suggesting to the Engineer, Contractor, Manufacturer, Dealer, Agent and
All Business Men Opportunities for New Business

Bridges

Arizona, Phoenix—W. D. Northern Co. of Phoenix was awarded contract by Maricopa county highway commission for the construction of a reinforced concrete bridge over New River at \$34,617.50.

Cal., San Francisco—Contracts totaling \$66,972 for the new steel bridge at Six Bit Gulch on the Hetch Hetchy railway have been recommended by City Engineer O'Shaughnessy. The contracts are as follows: Union Construction Company, steel work, \$26,132; Schultz Construction Company, concrete piers, \$32,940; M. J. Lyons, grading and laying track, \$7,900.

Cal., Sacramento—Contract for a bridge across Bear River, between Placer and Nevada counties, has been awarded by the State Highway Commission to the Security Bridge Company, of Ogden, on a bid of \$28,250.

Cal., Sacramento—Contracts have been awarded by the California Highway Commission to Parlier and Lowry of Tulare for construction of a bridge over the Cuyama River on the so-called Cuyama lateral between Santa Marie and Bakersfield. Eight bids were received. The low bid was \$50,819.71 as compared with an estimate of \$58,783.50 by the Engineering Department of the California Highway Commission.

Ore., Salem—The highway commission announces the award of the contract to H. E. Doering, 568 Maple street, Portland, Ore., for the construction of a reinforced concrete arch bridge across the North Umpqua River on the Pacific highway at Winchester, near Roseburg. The total cost will be approximately \$125,000, in which Douglas county, the state of Oregon and the federal government are cooperating.

Buildings (Industrial)

Cal., Oakland—The Foundation Company of San Francisco has been awarded the contract for the erection of the first unit of the General Electric Company's plant at 54th Avenue and 14th Street, to cost \$90,000.

Cal., Pittsburg—Plans have been prepared by B. G. McDougall, of San Francisco, architect, for three manufacturing buildings to be added to the plant of the Pioneer Rubber Mills of this city as a part of the \$500,000 development program recently authorized by the directors.

Cal., San Francisco—Plans are being completed by O'Brien Bros., architects, for a three-story reinforced concrete factory building for Louis R. Lurie to be located on Bryant Street, near Second. Vukicevich & Bagge, 180 Jessie St., are the contractors.

Cal., San Francisco—Ralph McLeran & Co., recent purchasers of property bounded by Mariposa, Harrison and Alabama Streets, will start immediately the erection of a two-story warehouse which has been leased by the Illinois-Pacific Glass Company.

Cal., Sacramento—Erection of a new cannery at Isleton for the purpose of canning asparagus and spinach has been announced by Walter I. Hechtman and Wilbur F. Gardiner at a recent meeting of the California Asparagus Growers' Association in Walnut Grove. The new cannery will have a capacity of approximately 150,000 cases of asparagus each season.

Idaho, Nampa—Construction will start soon on the new ice storage building of the Pacific Fruit Express here. The cost is about \$50,000.

Ore., Independence—A planing mill of sufficient capacity to handle the 10,000,000 feet of lumber in the yard, is being installed by the Fostern Lumber Co., on the site of the fire devastated plant just this side of Kings Valley.

Ore., Portland—A \$60,000 factory will be erected immediately at East Twenty-second street and Sandy boulevard by the recently organized Stenno Carbon Paper Manufacturing company, according to H. H. Ward, president of the concern. The factory will be one story in height and will be of reinforced concrete with metal sash. The contract has been let to the Hurley-Mason company.

Ore., Portland—The Webster Chair Co. with headquarters in Superior, Wisconsin, is negotiating with contractors for a new building to be erected in the near future on land measuring 100 x 200 ft., purchased by the company recently at 26th and Nicolai streets. The building will be of concrete, four stories high, and will be occupied by the Portland branch of the factory. It will be erected under the direction of F. Thomas, manager of the Oregon branch. Actual construction will be started in a month.

Wash., Spokane—Construction work is to begin at once on a \$10,000 factory and sales room for the Harold Furnace Company.

Wash., Spokane—The Adam Brown Packing plant, 116 Havana street, destroyed in a \$50,000 fire, will be rebuilt as soon as satisfactory adjustments can be made with fire insurance companies, Adam Brown, proprietor, has announced. The new plant will be modern in every way and will cost approximately \$30,000, in addition to equipment.

Wash., Tacoma—Thos. Carstens has started construction on the first unit of his reinforced concrete and steel packing plant which, with equipment, will cost \$1,500,000. The plans have been approved by the federal government. It is expected that this unit will be completed and equipped in about six months.

Wash., Aberdeen—The West Coast Fish Company has been incorporated by A. Karl, George Swansen and John Marilla, for the purpose of establishing a clam cannery. Firm has capital stock of \$15,000.

Wash., Kelso—The Long Bell Lumber Company plans the erection of two large sawmills on the Columbia River, one near Kelso and the other at Rainier, Ore., and to begin logging of the company's 60,000 acres of timber lands. A 15-mile railroad has been surveyed and will be built, and several hundred thousand dollars spent in dyke protection.

Buildings (Miscellaneous)

Cal., San Francisco—Market—The Crystal Palace Market Co., 1175 Market St., is planning the erection of a one-story steel frame market on the south side of Market St., 205 ft. east of Eighth. D. C. Coleman, architect. Estimated cost, \$250,000.

Cal., Yuba City—School—Bonds in favor of a union high school to be located in Yuba City were carried at a recent election here.

Cal., San Francisco—The American Legion Auditorium, northeast corner of Turk and Polk Streets, to cost \$400,000, will be completed by Feb. 1, according to plans recently announced. The building is being constructed by Golden Gate Post No. 40 and will be leased by Louis R. Lurie for a period of 15 years at a total

rental of \$500,000. The plans include attractive lodge rooms for Golden Gate Post; the auditorium stage will be one of the largest in the city and is specially designed for the presentation of grand opera and high class concerts.

Cal., San Francisco—Louis R. Lurie has purchased the property at the northwest corner of Fifth and Clementina Streets where he will erect a two-story concrete building to cost \$70,000.

Cal., San Francisco—Apartments—Construction work on the Francesca Apartments, southeast corner of Sacramento and Powell Streets, has been started by the contractors, MacDonald and Kahn. The building will be a ten-story, Class A, steel, fireproof apartment house, and will cost \$750,000. It will contain 225 rooms in various units of apartments ranging from four to twelve rooms. The owners are the Sacramento-Powell Company, of which A. C. Blumenthal is president.

Cal., San Francisco—Office Building—A syndicate of San Francisco men, for whom A. C. Blumenthal & Co. are the agents, has purchased the Winter Garden property in Los Angeles, where a 12-story office building, designed especially for financial concerns, will be erected.

Cal., Napa—Packing Plant—Contract for an addition to the Growers' Packing and Warehouse Company's plant here, has been let to the West Coast Construction Company. The contract price is \$65,000.

Cal., Sacramento—School—Preliminary plans for the high school structures have been approved by the board of education and the supervisors have been directed to sell \$750,000 worth of high school bonds. The new buildings will include 48 class rooms, vocational training and junior college departments, gymnasiums and cafeteria. Edgar A. Matthews is the architect.

Cal., San Francisco—Post Office—Bids for the new ferry post office will close August 31, according to recent announcement by Postmaster James E. Power. The site must be located near the ferry building and be of sufficient size to permit a building with 25,000 sq. ft. of ground floor.

Cal., San Francisco—Telephone Station—A new fifty-booth telephone pay station will be constructed at 105 Powell Street by the Pacific Telephone and Telegraph Company at a cost of approximately \$30,000.

Cal., Oakland—Asylum—Plans are being prepared in the office of George B. McDougall, state architect, Forum Building, Sacramento, for the Oakland State Blind Asylum to be erected on Telegraph Avenue. There will be a two-story employees' building, a one-story women's shop building and a one-story recreation and power house building, all to be of brick construction. The cost is estimated at \$70,000.

Cal., Modesto—Hospital—Brown and Stafford, of Madera, have been awarded contract for the erection of a hospital at Ahwahnee, Madera county, for \$43,518.

Cal., Los Angeles—Institution—The Good Shepherd Home which is to be built near Pico Street on Arlington Street, will cost approximately \$250,000. The buildings are to be of fireproof construction. In addition to the main building there will be a chapel. A. C. Martin is the architect for the home.

Cal., Sacramento—Apartments, Stores—The Capital Construction Company has started clearing the lot on I Street between Seventh and Eighth Streets, where a three-story and basement reinforced concrete building will be erected. The property was recently acquired by B. S. Berry, of San Francisco, representing a syndicate of that city. The building will cost approximately \$50,000; the first floor will be leased for commercial purposes and the upper floors will contain eight two-room apartments.

Cal., Sacramento—Office—Bids for the erection of the new state printing office will be called for August 18. The building is to be located at the southwest corner of 11th and O Streets. George B. McDougall is state architect.

Cal., Van Nuys—Store—L. S. Granger has awarded the contract for a store building to be erected on Sherman Way between Erwin and Calvert Streets to Frank Tiara, local builder.

Cal., Van Nuys—Hotel—G. W. Clark, special representative of the Apartment Building Co., of Los Angeles, is here negotiating for a site on which his company proposes to erect a modern hotel building to cost between \$40,000 and \$50,000. Two sites located near the center of town are under consideration.

Cal., Pasadena—Club Building—The faculty club building and electrical tower building, which are to be erected at Throop Institute of Technology, will cost \$175,000. The buildings are to be hollow tile and reinforced concrete construction. B. G. Goodhue of New York and C. M. Winslow are the architects for the buildings.

Cal., Los Angeles—Apartments—Gregory R. Evans has prepared plans and will erect a 3-story and basement apartment house on Westmoreland Ave., between 7th St. and Leeward Ave.; ninety-one rooms, 44 apartments, to cost \$85,000.

Cal., Los Angeles—Store—Stanton, Reed & Hibbard, 620 Metropolitan Bldg., are completing plans and specifications for an 8-story and basement, Class A store and loft building on Hill Street between 6th and 7th Streets, for Starr Piano Company, to cost \$250,000. Present building on site is now being wrecked.

Cal., Los Angeles—Post Office—Wurster Construction Company has contract for the new railway terminal post office building at Third St. and Central Ave. for the Terminal Development Co. Cost to be about \$300,000. Foulkes Electric Co. has wiring contract.

Cal., Los Angeles—Apartments—Geo. M. Easton has contract for a 4-story brick store and apartment building to be erected at 5169 Hollywood Blvd. for Oscar Wilson. It will contain 4 stores, 90 rooms divided into 43 apartments. Cost to be \$80,000.

Highways

Cal., Los Angeles—Fairchild-Gilmore-Wilton Co. was awarded contracts by the board of public works for paving Ninth St., between Boyle and Santa Fe Aves., at \$18,986.71, and for paving Manchester Ave. between Vermont and Western Ave. at \$34,637.74.

Cal., San Bernardino—Utah Construction Co., San Francisco, was awarded contract for constructing Big Bear Valley road in Angeles National Forest, San Bernardino county, of approximately 10.4 miles. This new road will connect with the Crest Route at a junction 5 miles east of the City Creek road summit and will extend through Fish Camp across North Fork Creek and up Bear Creek, entering Big Bear Valley near the dam. The road is expected to cost approximately \$270,000.

Cal., San Gabriel—A total of \$375,000 will be expended on the 11 miles of road now under construction in San Gabriel Canyon. About $8\frac{1}{2}$ miles of the new road have been completed. This road, besides opening up a mountain wonderland, will provide a new route from the south

into the Antelope Valley. The canyon lies in the Angeles National Forest reserve.

Cal., Santa Monica—Santa Monica-Ocean Park chamber of commerce has unanimously endorsed a proposition for a bond issue to open and widen some 15 streets, including the Trolleyway, Main St., Pier Ave. and Washington Blvd., in the Ocean Park section, and the joint opening of Second and Third Sts. and Michigan and Pennsylvania Ave. in the center of the city.

Cal., Sacramento—The State Highway Commission has awarded contract for grading 16 miles of road from Auburn to Colfax to C. H. and A. W. Gorrill, Oakland, on a bid of \$408,954.

Cal., Sacramento—A contract for paving approximately eleven miles of highway between the city of Colusa and Long Bridge in Sutter county on the Tahoe-Ukiah cross-state road in all probability will be awarded to Bonnell, Savage & Fenn, a Tacoma, Wash., firm, at the next meeting of the State Highway Commission. The bid of the Washington firm, which totals \$113,764.80, with the use of corrugated metal pipes for culverts, and \$113,972.80, with the use of reinforced concrete pipes, is the lowest of several filed with the Highway Commission and about \$13,000 below the official estimate of the road body. Low bids submitted on other projects are as follows: Inyo county—Grading 11.7 miles near Fish Springs School: lowest bid of \$67,333.50, filed by Redmond, Page & Pond. Official estimate, \$64,036. Kern county—Grading of 3.6 miles between Cottonwood Creek and First Crossing Kern River; lowest bid of \$281,157 filed by W. S. Mead of San Francisco. Official estimate, \$248,052. Madera county—Surfacing with asphalt concrete eight miles between Arcola School and Borden Station; lowest bid of \$13,860 filed by the Federal Construction Company of San Francisco. Official estimate, \$15,400.

Cal., Sacramento—The State Highway Commission has awarded contracts for the grading of a road in Placer county and for the construction of a bridge across Bear River, between Placer and Nevada counties. The contract for the grading of sixteen miles of road from Auburn to Colfax was awarded to C. H. and A. W. Gorrill, Oakland, on a bid of \$408,954.90. The bridge contract was awarded to the Security Bridge Company, Ogden, Utah, on a bid of \$28,250.50.

Cal., Tracy—The city council has passed a resolution ordering the improvement of 11th Street, the main artery of the town, which is also the Lincoln Highway. The street will be paved to a width of 40 ft. with a 5-in. reinforced concrete base topped with $1\frac{1}{2}$ in. of natural bitumen. It will be paved for a distance of 6,600 ft.

Colo., Libby—Contract for the section of Roosevelt highway to be built by government funds has been let to Siems and Carlson, of Spokane, Wash., price \$99,339.

Ida., Spencer—Contract for the construction of the Forest Service Highway from a point north of Spencer to Monida, has been let to Coolidge & Co., a large contracting firm with branch offices at Pocatello; price, \$42,700.

Ore., Pendleton—A contract has been let to the Johnson Construction Company to build four miles of road in the east end of Umatilla county, near Weston, known as the Pine Creek road, at a price of approximately \$49,000.

Utah, Ogden—Fred Coolidge of Laramie, Wyo., was awarded the contract for the building of fourteen miles of road on the Montpelier-Afton project for \$21,000, according to the announcement from the office of the bureau of public roads.

Wash., Tacoma—Contract for grading and graveling a section of the Gig Harbor-Long Branch Highway, has been awarded by Pierce

County Commissioners to Sweeney & Holz of Tacoma, on their bid of \$23,888.

Wash., Waterville—The Mohr Construction Company, Waterville, on its bid of \$37,601.80, received the contract for improving a 3-mile connecting link of permanent highway No. 10, in Douglas county.

Wash., Olympia—Bids will be opened on September 5 by the State Highway Commission for the grading and graveling of nearly 20 miles of water grade highway from Yakima to Ellensburg. The work is estimated to cost \$700,000, half to be paid by the state and the other half by the Department of Agriculture.

Irrigation Projects

Cal., Oroville—George Pollock, contractor, has been awarded the contract for excavating 80,000 cubic yards of earth in Section 1 of the main drainage canal of Reclamation District No. 833. Pollock's bid was 35 cents per cubic yard, which was lower than the other two bidders, Dan Bayles and John Phillips.

Cal., Ventura—Boyd E. Gabbert of Ventura has filed application with the division of water rights, state department of public works, for a permit to appropriate 22,000 acre-feet per annum of the waters of Matilija creek to irrigate 8,500 acres on Rancho Ojai, Ventura county. It is proposed to build a dam 170 ft. high at a cost of \$1,000,000.

Cal., Sacramento—A special bond election for approximately \$8,000,000 to cover Sutter-Butte by-pass assessment No. 6 of the Sacramento-San Joaquin drainage district, has been set tentatively for September 2, it was announced by the State Reclamation Board. The date originally had been set tentatively for August 26, but was postponed because more time was needed to prepare the necessary papers. The bonds, it is proposed, will be used to cover delinquent assessments.

Cal., Marysville—Preliminary work is getting under way in the \$24,000,000 project of the Yuba Development Company. Contract has been let to R. H. Mahoney, of San Francisco, for the hauling of 250,000 sacks of cement and other materials for the building of a dam over the Yuba River, which will be one of a series of five included in the project. Following the dam construction several large power houses will be erected for the development of electrical energy, and extensive irrigation work is included in the plans.

Cal., Modesto—Directors of the Modesto Irrigation District at a recent meeting instructed P. F. Jones, chief engineer, to prepare plans and specifications for a transmission line from the Don Pedro power house to Modesto, also for a substation to be built in this city, at a cost of approximately \$79,000.

Ore., Klamath Falls—Irrigation and resultant development of the 1,000 acres of rich land in the Malin and Shasta View districts of Klamath county is seen in the signing of a contract between the districts and the Government and the voting of bond issues of \$100,000 for the Malin and \$120,000 for the Shasta View districts. Funds derived from sale of the bonds will be used in installation of a pumping plant and construction of a ditch.

Wash., Wenatchee—The Palisades Irrigation District has been organized under the state irrigation laws for the purpose of taking over and improving the irrigation system of the old Moses Coulee Fruit Lands Company formerly owned and controlled by George A. Virtue of Seattle. Temporary officers are A. L. Dirkes, president, Wallace Hart, secretary.

Wash., Walla Walla—The board of directors of the Horse Heaven Irrigation District recently signed a contract with Contractor Howard Amon for construction of the proposed irrigation project. The final and permanent contract replaces

the former contract, which was hurriedly drawn and eliminates a number of objectionable features.

Power Plant Equipment

Cal., Oroville—Preparations to spend approximately \$15,000 in construction and reconstruction work at Gridley and Biggs are being made by the Pacific Gas and Electric Company's office here. The work includes improvements to the Gridley substation, installations of regulators and other features of benefit to the service in and around Gridley and Biggs.

Power Projects

Wash., Spokane—Construction work will begin about August 1 on the new high-tension power line of the Washington Water Power Co. from Lind to Colfax and Pullman, it is reported. The cost is about \$500,000.

Wash., Mukilteo—Work of installing the proposed extension of the power lines of the Puget Sound International Railway & Power Company from Everett to Mukilteo and around Lake Stevens, is progressing rapidly and the company expects to be able to furnish service by September 1.

Wash., Spokane—The Washington Water Power Company began work on August 1 on construction of the new high-tension power line from Lind to Colfax and Pullman. The line will be 100 miles long, carrying 60,000 to 110,000 volts, and will cost approximately \$500,000. When completed, the power company will be able to supply electric power to the Palouse country from either end of the circuit.

Wash., Deer Park—Work will be started within 30 days on a new three-wire power line to carry 12,000 volts between Deer Park and Clayton, according to plans of the Mount Spokane Power Company, which has been granted a franchise by the Department of Public Works. The line will be nearly five miles long, and will supply between 75 and 100 residences and stores in Clayton with electricity.

Wash., Olympia—The Westside Rural Light and Power Company, here, has been formed by Thomas L. O'Leary, to furnish light and power to rural sections.

Wash., Wenatchee—Work on the proposed new transmission line that will bring 30,000 hp. of electrical energy into north central Washington has been started by the Washington Coast Utilities Company. The new line will cost \$800,000, and will be built up Green River, following the Northern Pacific to Cle Elum and thence over the mountains to Wenatchee.

Railways

Alaska, Ketchikan—The Alaska Petroleum Co. of Katallahave secured enough capital to complete the construction of the railroad started by that company two years ago, a distance of about 22 miles, which will start immediately. The company will also build a dock at Kanak Island about 12 miles from Katalla, which will necessitate the building of a trestle about 1½ miles from the mainland to the island, the cost being about \$600,000.

Cal., San Diego—Improvements planned by the San Diego Electric Railway Company, and announced by President John D. Spreckels, include \$350,000 for reconstruction of the double lines to East San Diego. Orders were sent forward for materials to cost \$500,000.

Cal., San Francisco—Bids for the construction of twenty "J" and "K" type cars, trucks, bodies, air-brake equipment and motor equipment, costing approximately \$350,000, were called for by the board of public works. The cars will be used on the municipal railway. Bids will be opened September 26.

Cal., Santa Monica—Santa Monica will receive bids August 20 for a blanket franchise for a

transportation system within the city limits. The Pacific Electric Railway Co. and the Bay Cities Transportation Co. will compete for the franchise. The city reserves the right under the terms of the ordinance not to accept the highest bid, but to grant the franchise to the company which offers to furnish the best transportation facilities.

Street Lighting Systems

Cal., Los Angeles—City council has adopted an ordinance ordering lighting posts and appliances in the following streets: Sixth St. between Pacific Ave. and Harbor Blvd., San Pedro and Broadway, between 16th St. and Pico.

Cal., Los Angeles—Bids are being received by board of public works for constructing an ornamental lighting system in Buckingham Rd. between 16th and Washington Sts.

Utah, Farmington—The Utah Power & Light Company has just finished the installation of a new street lighting system for the city of Farmington. Seven new 400 c.p. Novalux series street lights have been installed, in addition to several lights on the state highway.

Wash., Centralia—Bids have been called for for the installation of the ornamental curb lighting system. The city is to furnish cable, standard lighting units, transformers, time switches, lamps and cut-outs, the bidder to furnish all other material and labor.

Wash., Chehalis—City Clerk John West is receiving bids for installing and furnishing materials for an ornamental lighting system, the city to furnish cable, light, standards, etc.

Streets and Sewers

Cal., Culver City—Culver City is now in a position to proceed with the construction of a sewer system for which \$75,000 bonds have been voted, the project having been deferred pending an agreement with Los Angeles city on the question of sewage disposal. Original plans of the engineers called for an activated sludge treatment plant, but under the agreement just made with the city of Los Angeles, sewage will be treated in a plant to be built and operated by Los Angeles. This arrangement is made in consideration of Culver City granting right of way through its corporate limits for the Los Angeles outfall line now being constructed.

Cal., Los Angeles—Los Angeles city council has definitely decided to call a special election for August 29, at the state primary, to vote on the proposed \$12,000,000 bond issue for a new outfall sewer.

Cal., Pasadena—Preparations are being made to start construction of an activated sludge plant for treatment of sewage on the Pasadena sewer farm in about a month. This plant will be used jointly by Pasadena, Alhambra and South Pasadena. Pasadena has voted \$325,000 bonds for the treatment plant and Alhambra has voted \$300,000 bonds for a sewer system and treatment plant. South Pasadena will contribute \$40,000. Work will be under direction of City Manager Koerner, Pasadena, City Manager Lorraine, Alhambra, and City Manager Orbison, South Pasadena, with the advisory assistance of their respective commissions.

Utah, Ogden—Fourteen contractors submitted bids to the city commission for the construction of four and one-half miles of water mains in the southern part of the city and extensions in other districts. The lowest bids were by the Western Engineering and Spencer Plumbing companies, both of Salt Lake. The bids were referred to the city engineer for tabulation and report. The Western Plumbing Company was low on three styles of pipe. They were: \$139,773 on cast iron pipe; \$155,367 on class C iron pipe, and \$116,412 on Matheson joint pipe, galvanized and dipped. The Spencer Plumbing Company bid \$117,676 on Matheson joint pipe dipped.

Wash., Seattle—The city council, after weeks of discussion, has ordered the paving of Olive Way, from Bellevue Avenue to Olive Street, and Olive Street, to John Street and Harvard Avenue. The work will cost \$200,000.

Wash., Walla Walla—The city commissioners have passed resolutions providing for the paving of four blocks of Poplar Street.

Water Works

Cal., Redlands—The East Lugonia Mutual Water Company, recently organized to expend \$200,000 in the development of 600 in. of water in the Mill Creek cone above Mentone, has awarded the contract to H. Spiezz and Company for the sinking of three shafts, the first to be about 200 ft. deep.

Cal., Sacramento—The city council will receive bids until Aug. 24 for the construction of the pumping and filtration works of the city of Sacramento.

Cal., El Centro—Sale of \$5,500,000 bonds of the Imperial Irrigation District for purchase of properties of the mutual water companies of the district has been made to the First Securities Company of Los Angeles and the Anglo-London-Paris Securities Co. of San Francisco. The bankers recommend that the marketing of the \$2,000,000 bonds voted for drainage be deferred.

Cal., Lakeport—A bond issue for extension and improvement of Lakeport's water and sewer system carried at a recent election. Water bonds of \$65,000 and \$10,000 issue for sewers were included.

Ore., Coquille—A. B. Gidley received the contract for the construction of the water works improvements, including the Rink Creek dam and reservoir.

Ore., Portland—George S. Gaunt, mayor of Condon, has filed with State Engineer Cupper an application covering the appropriation of water from Hay Creek, tributary to John Day River, for a municipal supply for the city of Condon. The municipal project contemplated under this application includes the construction of four miles of pipe line with other improvements at a total estimated cost of \$85,000.

Ore., Portland—The Willamette Iron & Steel Company has received a contract for the construction of 9,000 tons of steel pipe, 9 ft. in diameter, penstocks and other equipment to be used in 8½ miles of conduit to supply water to a new power plant which will be installed on the upper Clackamas River by the Portland Railway, Light and Power Co. The contract calls for the expenditure of approximately \$1,000,000. It was announced that the work on the new pipe line would begin immediately after the completion of 25 miles of new roadway extending eastward from the end of the electric line at Cazadero. Cost of the completed project will be in the neighborhood of \$3,500,000.

Wash., Tacoma—The municipal water department plans expenditure of \$51,500 in repairs to the city water system, including an expense of \$24,000 at the McMillan reservoir and \$27,000 at the other reservoirs in the city, together with re-laying a large amount of concrete and cast iron pipe.

Miscellaneous

Ore., Bend—Kilns—Construction of ten dry kilns, making a total battery of 30, was started at the Shevlin-Hixon Co. plant here, the improvement, with other changes which it makes necessary, to mean an investment of \$500,000. The type of kiln put out by the Northwest Blower Kiln Co., of Portland, will be installed.

Wash., Seattle—Dock—The Ames Shipbuilding & Drydock Company has awarded a contract to the Puget Sound Bridge & Dredging Company for an addition to the present West Waterway dock, to be 509 x 52 ft. in size, costing \$35,000.

Journal of Electricity and Western Industry

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Doctors of Electricity

MISTER Reliable Contractor, you are the Doctor of Electricity in your town. Your degree has probably been conferred by the University of Hard Knocks, but upon you rests the burden of educating the public to insist on quality equipment and workmanship. If you as a reputable electrical doctor do not educate your trade to insist on the proper sort of work—who will? Certainly not the fellow whose office is in his hat—the fellow who has no business standing or reputation at stake. People today are not looking for something that simply costs less, something cheap. What they want is a dollar's worth of service, satisfaction or material for every dollar they spend.

If you are permitting an unscrupulous contractor to educate your trade and you make yourself and your business policies an accessory to the idea of letting the uninformed public put in electrical equipment or construction of inferior values, you are jeopardizing the future not only of your own business but of the electrical industry as a whole. By so doing you are playing the unscrupulous

merchant's game in his own front yard—and there is no question as to who will be the winner!

Why not assume your responsibility as electrical doctor in your community and assist the state and national authorities and the reputable manufacturers and contractors to elevate the standards of electrical construction for the better satisfaction and protection of the public? Don't discount your reputation and lower your profits by letting a dealer with no reputation, or perhaps a bad one, fizzle the public out of the value he—the public—wants and deserves.

Show your customer why your bid is high. Show samples of the cheap and of the good equipment—photographs, perhaps of a similar job done in the right way and the other way—that he may compare them. You will be amazed at how readily the uninformed customer will acquire his electrical education.

The comments above are high lights from an open letter to contractors which appears in this issue. It is a message which merits the attention of all branches of the industry.

Contractor-Dealers and Cooperative Campaign Take Important Step

FACTS have at last been acknowledged, in California, at least, and the sun seems to have broken through the dark clouds which have been hovering over parts of the electrical industry. The Contractor-Dealer Association in California has offered to get behind any action to broaden retailing channels, and the Electrical Cooperative Campaign in approving their action has outlined a tentative program to invite all retailers of electrical products, who will abide by the established standards of the industry, to affiliate with the Campaign.

One of the most pressing problems which is facing the electrical industry is the matter of securing adequate distribution for electrical products, particularly those appliances used in the home. There has been a growing realization that the contractor-dealer, and strictly electrical store, cannot expect to have a monopoly on the distribution of these appliances. These establishments have been regarded by the industry as having a prior right of distribution, and efforts have been made to expand this type of establishment to meet the growth of the industry.

Distribution through hardware, department, drug, furniture and other stores has been discounted despite the fact that fifty per cent of the electrical trade is passing through these channels. In the past these establishments as a rule have not been admitted to organizations within the electrical industry. It was felt that they were encroaching upon the field of the electrical dealer.

The electrical industry has grown to such proportions that it must take advantage of every legitimate retail outlet, if the "electrical home" is to become universal. The first recognition of this has been taken by the California Association of Electrical Contractors and Dealers. The tentative decision of the Advisory Committee of the California Electrical Cooperative Campaign, to invite all retailers of electrical products to become members of the Campaign, is a furtherance of the idea.

This is thoroughly in accord with opinions voiced in these columns and we believe these decisions on the part of the electrical men of California are most significant. Their effect will be far reaching. It is the first move toward removing some of the factors which have been troubling the electrical industry. It will not be surprising to see the progressive action of these California bodies receive national recognition and commendation.

Putting Electrical Merchandising On Its Proper Plane

FAR sighted men have long looked forward to the day when the merchant of electrical products could take his rightful place among the highest class of retailers. That time has arrived. The "Billion Dollar Business" of merchandising electrical products has grown so in importance that today electrical stores number among the finest retailing establishments in many communities.

The day of the cubby-hole dealer, the pioneer, with his store in the back alley, is fast disappearing. His predecessor is occupying the choicest corners in the retail shopping district. The modern dealer's windows rank in attractiveness with the best, his display and show rooms contain the latest merchandising ideas.

Sacramento, California, recently witnessed the opening of an exclusive electrical establishment which is described elsewhere in this issue. It is one of the finest stores in the city and compares favorably with the best electrical stores in the country.

It is time that the entire electrical industry recognized that public demand is calling for better stores. The tremendous market which is waiting to absorb electrical products by the millions of dollars' worth can only be reached, and served, through the highest type of store.

"Home Electrical" Idea to Receive New Impetus

IN addition to announcing a determination to eliminate the difficulties facing the contractor-dealer, the California Electrical Cooperative Campaign will direct its efforts during the coming year to the "electrification of the home." Educational efforts to forward the installation of convenience outlets will receive additional emphasis. It is also planned to stage an elaborate electric range campaign.

Experience has shown that every range sale has proven an opening wedge to further electrification of the home. The simplicity of electric power for cooking, low domestic rates, the availability of large blocks of power, and a climate peculiarly adapted to electric power for cooking and heating, augur well for the success of this campaign. The possibilities of electric range sales would seem to be very large in view of the great power development now under way in California.

One power company in the Northwest has succeeded in placing an electric range in the home of one in every five of its consumers. There are only some 40,000 electric ranges distributed among the million and a half power consumers of the eleven western states. If the average of one in five can be realized in California alone an enormous market will be created.

Salt Lake Electrical Home For Man of Average Income

IN successfully staging its second electrical home exhibition, the Rocky Mountain Electrical Cooperative League has demonstrated that a home having all of the conveniences which can be provided by the full use of electricity is within easy reach of the man of moderate means. The Salt Lake Home, which was on display during the last week in July and the first week in August, was visited by ten thousand people. It was erected at a cost of approximately \$6,500, following the general architectural lines of the so-called "California bungalow" type of home, yet constructed of materials suitable for the

severe winters of the district. Its electrical features consisted of a total of fifty outlets and twenty-two switches.

In its presentation of this home for the inspection of the public, the Rocky Mountain Electrical Cooperative League is to be congratulated for demonstrating that the family of ordinary means can enjoy the comforts and conveniences of electrical appliances to a much greater extent than is the usual practice, without the expenditure of a large sum of money for what many have hitherto considered luxuries only within reach of the wealthy class.

A Western President For the A.I.E.E.

AT its conclusion the recent Pacific Coast convention of the A.I.E.E. at Vancouver, resolved itself into a meeting, enthusiastic in its endorsement of Professor Harris J. Ryan of Stanford University for next president of the national Institute. The movement started without the knowledge of Professor Ryan—he was traveling at the time and could not even be reached by telegram—but grew from the moment of its suggestion to a spontaneous demonstration. President McClellan, who presided over the meeting, will carry the resolutions back to the national organization.

So warm an affection is felt for Professor Ryan as a man, as well as so high a regard for his record as a scientist, that the first suggestion of his name brought an immediate response. He has been given no privilege of refusal and his name now stands as nominee for the presidency of the American Institute of Electrical Engineers. It is hoped that there will be no opposing candidate. Professor Ryan's contributions in the solution of the problems of long distance transmission are achievements of world-wide importance and are so recognized throughout the country. Professor Ryan's election would help in the movement of making the national engineering societies truly national. The West has never had a president of the A.I.E.E.—it offers now a man of such distinction that there can be no question of his desirability for the position. He stands as the choice of the entire West—it is altogether fitting and proper from every standpoint that his selection receive a nationwide approval.

Some Observations on Golf and Luncheon Clubs

NOT so very long ago, a chief executive of a great corporation addressed a letter to his branch managers, suggesting to them the propriety of absenting themselves a few minutes each day from golf in order to devote a modicum of their time to the company's business. Of course, this is rank heresy, and totally out of keeping with the spirit of the times. What is a mere contract compared to a perfectly executed mashie approach? What pride of achievement can compare with that of the victor of a four-ball match, when he mulcts his opponent of three perfectly good round white balls?

Really, isn't this golfing idea just a little bit overdone? And it isn't merely the sporting idea, but the super-imposition of affairs social upon the job that provides the meal ticket, to the almost submergence of the latter. The lunch clubs, and similar so-called business organizations, formed for the altogether laudable purpose of bettering conditions within and among industries, in many cases actually work toward the theft of two or more hours out of every business man's day for nothing more than pleasant and diverting social intercourse.

"All work and no play," as the copy-book would have it, seems in the process of being transposed to the other extreme. Verily, the business man and his business are in danger of being clubbed to death. It would be a mean and callous-hearted boss indeed, who would deny to his enthusiastic workers the support of the expense account with which most organizations of this kind are nourished, but, really, isn't the boss entitled at least to a run for his money?

Join a club if you like. Become identified with others of your calling. It is a good thing for you to see the giraffe, and for the giraffe to see you, but don't buy a season ticket to a series of side shows, and overlook what is going on in the big tent.

Encouraging Home Repair Work

THERE are always those in any field who desire to impress the laymen with the difficulties of technical knowledge. Very few plumbers will acknowledge that the householder has any chances with a clogged drain or a leaky faucet and it is the exceptional carpenter who has aught but scorn for the amateur handy man. The electrician is not exempt from this failing and much of the present inability on the part of the public to change a fuse or connect up an extension cord is due to the impression of the difficulty of the task gained from the electrical men with whom they have come in contact.

A wholesome respect for things electrical is a healthy state of mind. It is just as well that the jack-of-all-trades with which each family is provided should realize that home experiments in wiring are apt to cause him the loss of his insurance in case of fire. But there is no excuse for the common lack of knowledge in regard to fuses and several other simple departments of repair work. Power companies would be saved much unnecessary expense if they were freed from the many calls for service which are entirely unnecessary. In some cases where lines extend for twenty miles out into the country from the nearest office, the expense item for the change of a fuse is quite startling.

The manufacturers are awakening to the advantages of simplifying apparatus so that the laymen may make these simple replacements. It is time that elementary lessons in fuse changing and similar operations became part of every wiring job, and particularly of every range installation. It is surprising how much the average housewife is capable of learning if she is told.

Western Comment on Current Events

Editorial Notes and Readers' Views on the Outstanding Aspects of Financing, Trade Promotion, Legislative and Associated Topics that have a Special Bearing on Western Business

Although the forest fire situation in the Pacific Northwest and northern Rocky Mountain region is and has been, during the past summer, far worse than it has been for six years, there is little general appreciation of the fact throughout the country. So many hundreds of fires have there been and so many

brief reports of them, that they have come to be accepted as part of the routine of daily life. A recent survey completed by the Washington headquarters of the National Lumber Manufacturers' Association estimates that the damage which has been done to date in this country is in excess of \$5,000,000.

Possibly the greatest actual damage to virgin standing timber has been outside the boundaries of the United States and on the Canadian side, in the Pacific Coast region. One fire in British Columbia destroyed sixty million feet of the finest timber. So numerous have been the fires in that province that the Lieutenant-Governor of British Columbia ordered the cessation of logging operations on Vancouver Island in order to release the employees for fire fighting.

While there has been no such single case of damage on the American side, the fires have been even more numerous and have covered a larger area, including much of the timber region of eastern and western Washington, Oregon, Idaho and Montana. One hundred and fifty thousand acres have been burned over in Washington, and the property loss in Idaho is placed at \$1,500,000. Some virgin forest and tens of thousands of acres of cut-over lands have been burned and large quantities of second-growth timber have been destroyed. While cut-over fire damage does not measure into relatively large sums in terms of present value, it must be remembered that destructive fires on the cut-over lands mean loss of mature timber for the next generation and, sometimes, destruction of the soil. One calculation has it that actual or potential timber sufficient for 300,000 homes, has been burned in the last ninety days.

The season has been exceptionally dry throughout the Pacific Northwest, with the result that fires are very easily started. In one instance a spark from a donkey engine used in logging operations, started a fire which covered 20,000 acres of land, destroyed 15,000,000 feet of saw timber, four logging camps, fifteen donkey engines, one locomotive, thirty-five flat cars, twenty houses and three automobiles. Occasional small showers have sometimes aggravated the situation, because of the accompanying lightning and resulting new fires.

United States foresters, lumbermen and timber owners agree that the present costly experiences demonstrate that the primary step in solving the problem of the supply of forest products in the future, is adequate protection of the remaining stands of virgin timber and the cut-over lands on which nature is attending to reforesting. It is hoped by all of them that the disasters of this season will lead to early action by Congress and state legislation, looking to vastly improved provisions and arrangements for preventing and suppressing forest fires. It is pointed out that there is small chance for natural reforesting to succeed and no encouragement for afforestation when the probabilities are that fires will sooner or later undo the work of both nature and man.

The weekly transferable "pass" for street car rides has been approved by the California State Railroad Commission. The first try-out of the system in California will be in the cities of Riverside and Pomona. The new form of fare, popularly known as a pass, will cost \$1.00 and will entitle the holder to an unlimited

number of rides during the seven-day period for which it is issued. By an order of the Commission, The Pacific Electric Railway Company of Los Angeles was authorized to put into effect such a fare in the cities named. The pass will be good for each week beginning Monday and ending the following Sunday.

If the weekly flat rate plan proves a success in the south, it is believed that it will be adopted by street car companies in other parts of the state. Its advocates urge it as a means of restoring to the electric lines much of the patronage taken by the automobiles.

In approving the system for Riverside and Pomona, the Commission said:

During the past few years the local street car lines of The Pacific Electric in Riverside and Pomona have not been making operating expenses, taxes and depreciation, and part of the time the service has been conducted at an operating loss. The fare originally was 5 cents; this was increased to 6 cents several years ago, and on January 1, 1921, the single fare was increased to 10 cents, with a special book of seven tickets for 50 cents. Under none of these fare schemes has the street car line been a financial success. If the present scheme does not produce sufficient revenue to continue operation of the lines, it would seem apparent that relief must be secured from other than the car rider, or the lines will eventually be abandoned. The railroad hopes there will be enough purchasers of the \$1.00 weekly ticket to secure revenue to pay at least the operating expenses, taxes and depreciation.

Originated in Racine, Wis., where it has been in successful operation for some time, the pass system is seemingly gaining in popular favor. In August of this year the street railway system of Tacoma introduced the plan for a test period of four months. Electric railways are faced with the problem of finding immediate relief for the financial difficulties which have been brought about by overburdening taxes and the depredations to traffic caused by the automobile. It is to be hoped that the pass system will prove effective.

The old idea of looking to the East for funds for the West seems to be going by the boards. The East now is offering participation in nearly all its financing enterprises to Western bond houses. The West for the most part is buying all its own stocks and bonds. This has been particularly true in Spokane since

January 1. A survey of local offerings in the last six months shows a total of approximately \$3,200,000, the major part of which was taken in Spokane.

Included in these strictly local offerings were the following:

Washington Water Power Company.....	\$1,495,000
Deaconess Hospital	200,000
Christian Science Church	40,000
Crescent Store	300,000
Culbertson's	300,000
Downtown Sewer Bonds	150,000
Spokane County Highway	650,000
Federal Land Bank Bonds	50,000

The increasing prosperity of the entire West is attested by the ease with which large amounts of securities have been absorbed locally within the past few years. Eastern financial centers will undoubtedly influence western conditions for an indefinite period but absolute dependence is a thing of the past.

The establishment of a national hydraulic laboratory for the study of the scientific side of flood control and other hydraulic problems is being advocated by leaders of American engineering.

Some time during the next few weeks Dean Mortimer E. Cooley of the University of Michigan, president of the American Soci-

ety of Civil Engineers, will appear before a sub-committee of the Senate Committee on Commerce to advocate the laboratory proposal. A bill to create such a laboratory is now before the Senate and a sub-committee composed of Senator Ransdell of Louisiana, Senator du Pont of Delaware and Senator McNary of Oregon has been charged with studying the matter and reporting the measure to the Senate.

The executive board of the American Engineering Council has also taken steps to bring the matter to the attention of the Administration. Col. J. H. Finney has been directed by this organization to present a full review of the facts of the case to President Harding.

With the entire federal water power situation in what is called a critical condition, involving innumerable economic consequences, a comprehensive study

of stream flow and flood control throughout the country is an immediate necessity. Loss of life and property damage due to floods, economic significance of water power developments, industrial utilization, quantity, quality and possible contamination of municipal supplies, and interstate subsurface water supply are some of the grave problems which might be studied by such a laboratory.

The recent announcement of the call sent out by the Society for Electrical Development for a conference of local electrical leagues, to be held at Association

Island September 5-7, has met with instantaneous approval. Not the least worthy feature of the movement is the wholehearted basis of cooperation which has

been arrived at between the Joint Committee for Business Development and the Society so that the conference will be a tremendous success.

On August 20 commitments to attend the conference had been received from over eighty representatives of some nineteen of the most progressive cooperative leagues. These men will be authorized to speak for no less than forty-three cities.

With the assurance of representatives from Denver, California, St. Louis, Buffalo, Syracuse, Elmira, Cleveland, Columbus, Pittsburgh, Dayton, New York, Quebec, Newark, N. J., and other equally progressive communities prepared to tell their story, a comprehensive cross-section of local cooperative effort will be made available.

This information and the data that will of necessity be part of it will be a sound foundation upon which to build constructively so that all may reap the benefits of the improvement in business which indications show is imminent.

While the great bulk of the coal mines of the nation have operated under unionized conditions in the past and are therefore tasting the dregs of unionism in the present great strike, it is indeed refreshing to observe that

the coal mines of western Washington which discarded union domination a year ago, continue

to break production records with open shop employees. In this connection the official bulletin of the Pacific Coast Coal Company, issued July 20, says:

It is very pleasing to note that we have again resumed the practice of record breaking. July 8, with a total output for the day from all mines of 2,819 tons, contributed the largest daily hoist since resumption of operations. Newcastle mine broke its daily hoist record with 1,217 tons on July 8, also its weekly record with a total of 5,667 tons. Average daily tonnage for the various mines during the week ended July 14, 1922, and the total output was:

Mine	Average Daily Output for week	Total Output for week
Newcastle	944	5,667
Black Diamond	786	4,713
Burnett	484	2,905
Issaquah	389*	1,557*
Total.....	2,474	14,842

*Issaquah mine worked 4 days only.

Letters to the Editor

Are You Allowing Unscrupulous Competitors to Educate Your Customers?

To the Editor:

Sir: I have been interested in the articles and editorials which you have been publishing regarding the unsound and chaotic conditions prevailing in the electrical contracting business. You have invited suggestions as to how certain conditions can be remedied. In the hope that contractors, who are menaced with unscrupulous competitors may profit by what others are doing, I would like to direct the following remarks to your contractor-readers.

At least one electrical contractor in every town I ever called in from Pennsylvania to California and from Canada to Texas insisted that "people are different in our town."

Human nature is about the same in Kalamazoo as in Fresno or anywhere else for that matter. The motives that prompt men to act one way or another at different times or under different conditions are mostly the result of their understanding, past experience or education.

If your ten year old son went into a shoe store for a pair of shoes he would simply say: "I want a pair of shoes." An unscrupulous merchant could sell him shoes with cardboard soles as easily as leather. Why? Not because the boy wasn't intelligent, or because he was different but because he has not been educated either through experience or study to demand leather instead of paper soles.

If it were necessary for you to have a serious operation performed would you call in an advertising surgeon—a fellow who could "save you some money?" Emphatically no! Your good judgment which is the cumulative result of your past experience, knowledge and education, would tell you that in spite of the fact that this man would operate for less money it would be a poor bargain.

Have you ever had any dental work done? If so you may have asked your dentist for an estimate of the cost of having this work done and his estimate may have seemed outrageously steep. But did you get up and leave and tell him you were going to the fellow around the corner who advertised in the newspaper—the fellow who could do it for less money?

You may have been tempted to do this, but your dentist was also your educator or instructor in dental matters. He realizes that you are absolutely ignorant of the technique of dentistry and lack most of the essential knowledge to properly care for your teeth, so he doesn't cut his prices or lower his estimate to meet the other fellow, but he spends a few minutes and tells you some things you never knew about filling teeth. He appreciates the fact that you are an electrical man and he does not expect you to know why it should cost so much to have your teeth properly repaired.

He probably would start out something like this: "Now, Mr. Jones, your teeth are very important and essential to your general health and happiness. This

tooth has a large cavity. If I were to fill this cavity without proper treatment and fill it with some inexpensive substance the job would cost you less but it would not last long at best, and on account of the fact that it was not properly treated it would be very likely to cause infection and trouble. Now, I propose to put in a permanent satisfactory job that I will guarantee. This is what I intend to use"—he shows you specimen tooth with crown or inlay. He understands that nine-tenths of a man's education is acquired through his eyes and that it is much more clear to you and easier for him to show you by comparison than to attempt to explain. These specimen exhibits are always at hand and are used in almost every case to demonstrate the difference between his work and the cheaper job. You are quickly convinced that it is cheaper in the end and more satisfactory to have the quality job put in and you pay him perhaps ten times as much to do this work. Not only that but you are better satisfied and happier in spite of this relatively higher cost.

You are the dentist or surgeon of electricity in your community. The average man you figure with for a wiring job doesn't know any more about electrical installation than you do about surgery or dentistry. If you as a reputable electrical doctor or merchant do not educate your trade to insist on the proper sort of work—who will? Certainly not the fellow whose office is in his hat—the fellow who has no business standing or reputation at stake.

Many of the electrical contractors today are making the sad mistake of deliberately educating their customers to buy on price. They are paving the way for, and inviting unscrupulous competition and the public suffers in his ignorance. Most certainly you—the contractor—do not gain in profit or in prestige, by putting in a job of questionable quality.

Why is there more clothing sold at \$35.00 per suit and over than the cheaper garments? There is any quantity of fairly good looking suits to be had for \$15 to \$20. Men have been educated through the efforts of the reputable clothing manufacturers and progressive dealers and their own sad experience to buy the better grade of clothing. The same applies to many other commodities and articles everyone uses—food, shoes, tools, automobiles, safety razors, etc. People today are not looking for something that simply costs less, something cheap, but they do want a dollar's worth of service, satisfaction or material for every dollar they spend.

With the proper understanding of values this condition offers one of the greatest opportunities possible for a reputable electrical merchant to extend the prestige of his business and carry on profitable business activity.

If you permit the unscrupulous contractor to educate your trade, and you make yourself and your business policies an accessory to the idea of letting the uninformed public put in electrical equipment or construction of inferior values, you are jeopardizing the future of not only your own business but the electrical industry as a whole. By so doing you are playing the unscrupulous merchant's game in his own front yard,—and there is no question who will be winner in such a match.

Why not assume your responsibility as electrical educator in your community and assist the state and

national authorities and the reputable manufacturers and contractors to elevate the standards of electrical construction for the better satisfaction and protection of the public? Don't discount your reputation and lower your profits by letting a dealer with no reputation, or perhaps a bad one, fizzle the public out of the value he—the public—wants and deserves. Show him why your bid is high. Show samples of the cheap and of the good equipment—photographs, perhaps of a similar job done the right way and the other way—that he may compare them. You will be amazed at how readily the uninformed customer will acquire his electrical education.

If "people are different" in your field it is not their fault. It is because they have not been properly educated to insist on quality equipment and workmanship on the job.

E. S. CONRAD,
District Sales Manager.

Square D Company
San Francisco, August 21, 1922.

Inquiry Regarding Alleged Freakish Action of Electricity in Recent Accident

To the Editor:

Sir: I have read with much interest the recent accounts in San Francisco newspapers of an accident by which electricity from a high voltage line is said to have jumped a distance of twenty feet.

This accident, a newspaper clipping concerning which I am attaching, occurred near Oroville on August 8. In it you will note that three surveyors are reported to have been burned by electricity jumping to a steel tape held in the hands of two of them. The electricity seems to have acted contrary to the rules and I would appreciate it if you would ascertain the facts in the case.

I have been told that electricity under voltages such as are commercially used could not jump over a distance of more than a few inches under favorable conditions.

I hope that this will precipitate some discussion from electrical engineers and practical electricians as to what they have seen electricity do under various conditions.

WILLIAM COUGHLIN.

San Francisco.
August 11, 1922.

To the Editor:

Sir: In reply to your letter of the 12th inst. regarding accident at Tobin to members of highway survey. Please be advised that no unusual or freakish occurrence took place other than possibly an absolute lack of all knowledge of electric phenomena by the men injured. One man climbed the tower with one end of a steel surveyor's chain while another man started up the hillside with the other end of this chain. In some way the chain came within 8 or 10 inches of our high voltage circuit, which at the time had approximately 110,000 volts impressed. The men came in contact with the electric current,—one was thrown from the tower while the other rolled down the hillside and in falling succeeded in entangling a third party. The men were measuring the clearance from the line to the center line of the pro-

posed highway and evidently felt it was easier to do so by direct method rather than attempting to triangulate.

J. A. KOONTZ,
Asst. Director of Operations
Great Western Power Company,
San Francisco, August 15, 1922.

A Plea for the Self-Interest Argument in Opposition to Power Bill

To the Editor:

Sir: I have read Mr. Greenawalt's letter in your issue of July 15 with some interest. He seems obsessed with the notion that public utility employees on the whole are so uncivil that great wonders can be accomplished if they will only be genteel. Mr. Greenawalt is obviously unaware that these employees may resent the "preaching" attitude as being wholly unnecessary. To quote him: "There must be tireless effort on the part of the operating management to imbue every employee, etc." He says "imbue," not "inspire." That isn't strong enough. This important matter must be stuffed down the throat of the employees in the manner of forced feeding.

During the last few months I have talked to a number of people about the power bill, and not one single time have I heard anyone complain of uncivil treatment by employees. Many have expressed, directly and indirectly, a dislike for public utilities and a distrust of the men who control these, and who are suspected of being engaged in the noble pursuit of converting water into dividend paying stock if they can only succeed in humbugging the State Railroad Commission. And the publicity matter gotten out by the publicity departments of the utilities or their friends has helped the bill into popularity. This publicity matter has been couched in the spirit of the paragraph quoted above and the publicity departments have tried to imbue the public, forgetting that the public does not have to listen to insolent effusions and that an intelligent public will resent such childish and outrageous assertions as have been made by the opponents of the power bill.

Why did the utilities not come forward honestly and say: "We are against this proposal because we believe it will hurt our pocket-books and we believe it will hurt yours also"? That would have offered a real basis for public relations and public discussion.

B. F. JAKOBSEN.

Fresno, Cal.
August 1, 1922.

RADIO BULLETINS

The Journal of Electricity and Western Industry broadcasts a special industrial and business news report each Monday night at 7:30 o'clock, both from San Francisco and Portland. The San Francisco report is broadcasted from station KLP, operated by the Colin B. Kennedy Company at Los Altos, California. The Portland report is sent out by the Northwestern Radio Manufacturing Company from station 7XF. Both reports are broadcasted on a wave length of 360 meters.

The Function of the Jobber in the Distribution System

The Third of a Series of Articles Devoted to an Analysis of the Modern Tendencies in the Marketing of Products and the Advantages of Different Types of Distribution Methods as Applied to Various Classes of Goods

By E. A. KINCAID

THE jobber occupies a time-honored position in the orthodox system of distribution and he is still the most efficient unit in that method of distribution. He came into existence with the factory system and large-scale production, a product of economic forces, and he is still with us because of those forces. In the first stages of the factory system the manufacturer placed his goods on pack trains or in heavy wagons and started these on the road to the many little English shopkeepers who bought a season's stock at one purchase. The wagons traded finished goods, such as cloth, for wool and thus obtained a return cargo. Later independent merchants bought the manufacturer's goods and sent out men on horseback or in carriages to sell them. Thus both the jobber and the prototype of the modern traveling salesman became well defined parts of the distributive system by the beginning of the nineteenth century.

Until a fairly recent period the jobber has played a large and unquestioned part in distribution and even now his position is only relatively less important. The economic organization of society has undergone changes which have put the middleman under some pressure and the jobber has not been able to escape this. Consumers have not found it possible to maintain their standards of living in the face of rising costs of goods, the number and variety of those things now considered as necessities has steadily expanded, and competition among producers has become more intensive as production has encroached upon consumption. In consequence, effective distribution through the old channels has been difficult to obtain. Because of the pressure upon the distributive system some of the original functions of the jobber have been taken from him. The transportation and storage of goods have become functions of independent middlemen. Newspapers and advertising agencies have taken unto themselves much of the communication of ideas about goods—a function formerly the exclusive property of the middleman.

Changes in Status of Jobber

The development of middlemen who specialize by function has not left the jobber untouched and he now retains only the function of assembling goods and even that is imperilled by the tendency of manufacturers to so perfect their merchandising methods that it is possible to shift to channels of distribution in which the jobber plays no part whatever. Many manufacturers have come to believe (a) that they obtain the entire time of a staff of trained men who will give their exclusive attention to one line of goods; (b) that they can carry larger and better assorted stocks than the wholesaler would be able

or willing to carry; (c) that credit losses may be reduced, and (d) that better control of prices and merchandising policies is possible when the jobber is eliminated.

Now there can be no question that the experiences of the manufacturer have gone far to justify these beliefs, but it does not follow that the jobber must go. The possibility of distribution without the jobber has well defined limits and such a system is undoubtedly more applicable to some kinds of goods than to others.

Manufacturer Not Bound By Tradition

The manufacturer is not bound by tradition to any one channel of distribution. He is looking for that marketing system that will get the best results in terms of merchandising. He must have dependable access to markets—a flow of goods through the channel selected which will insure his factory steady and economical operation. He has found that advertising is an investment because it enables him to build up demand for his products quite independent of middlemen. He has therefore entered the advertising field on an extensive scale and this invasion of the field of distribution is the real explanation of others, actual and potential. While advertising has opened the door of the field of distribution to the manufacturer it does not follow that he should go further in this direction without careful consideration of the limitations necessarily involved. He must understand the position of the jobber and realize wherein he is strong and wherein weak. A careful consideration of this subject should reveal the fact that there are distinctly "jobbing" fields and in these the jobber is well entrenched. Drugs, groceries, hardware and automobile accessories are typical of this class. Here the jobber serves the manufacturer so well that he is practically indispensable. He carries a stock of goods, often seasonal in character, and he may solve the storage problem for such goods. He assembles thousands of items from hundreds of manufacturers and no dealer could possibly do business with so many manufacturers. He serves the manufacturer of goods of this class in that he reduces the number of accounts that the manufacturer must handle in order to obtain a given volume of business.

While the position of the jobber in the so-called jobbing fields is strong it is by no means impregnable and this may be seen in the experience of the manufacturer of electric switchboards who tried diligently for some years to sell his product through electrical supply jobbers. He finally gave up and sold directly to consumers. Switchboard salesmen have to be technical experts as well as salesmen. It was unreasonable to expect the salesmen of the jobber to concen-

trate the required time and study on the product of this one manufacturer when they had so many other items, equally important, to sell along with switchboards. Thus it appears that the manufacturer's product may have characteristics which involve merchandising problems of a complex character, so complex that the jobber cannot efficiently perform the distributive function which he so well performs for goods less specialized in character. Yet it should be said that the manufacturer is inclined to give his product a distinct character so that it will stand out vividly among competitive products, and this is being done with a good deal of success by means of trademarks and brands for goods essentially staple in character. To the extent that the manufacturer succeeds in this policy he is able to strengthen his grip on the market and dictate to the middleman or else take over the distribution of his own product. It follows that the jobber must fight to hold even that field which is essentially a jobbing field.

Proctor and Gamble an Example

Soap may well be classed as a staple, yet the Proctor & Gamble Company has been able to give its goods a distinctive position among many competitive products and thus this firm has been able to assume an independence of middlemen which would otherwise have been impossible. The strategic advantage gained by the Proctor & Gamble Company has enabled it to extend the same quantity discounts to both wholesalers and dealers. The company broke with the traditions of the jobbing world because it had reached the place where the jobber was dispensable. The extensive advertising campaigns of the company had given the goods a distinctive position in the opinion of consumers and the relation of the company with consumers thus became more intimate. Distribution through the jobber tended to disturb this intimacy and make it less effective, which is only saying that the selling power of its advertising was neutralized. For this situation the jobbers were to some extent responsible. They had their own private brands of goods and sold them in competition with the products of the company. This resulted in the presence of competition from a source where only cooperation was wanted. It was logical for the company to conclude that it could maintain a more direct control of competition with retailers than if its destinies were left to a third party who, in general, "never claimed to be a fighter for the trade of any one manufacturer as against others." The wisdom of the action of the Proctor & Gamble Company remains to be conclusively demonstrated, but for the present the indications are that a manufacturer may become strong enough to break with the jobber in the distribution of goods once thought to be distinctly within the jobbing field.

Jobbers in the Paint and Book Fields

In the next place, there are certain kinds of business in which the jobber is not well intrenched but where he manages to maintain his position with a good deal of success. Here the mixed paint business and the book publishing business may be taken

as examples. Most of the large paint manufacturers sell directly to dealers with whom they maintain close contact by various successful methods. No more interesting example of such methods can be cited than the dealer educational campaign launched and carried to a successful conclusion by John Lucas & Company. This company made a careful study of the weaknesses in the merchandising methods of retailers and published a book entitled "100 Per Cent Retail Selling," which became the center of an educational campaign so effective that it brought home to many dealers the reasons for their failures and developed among them that desire for enlightenment which is the prerequisite for improvement. John Lucas & Company did not make use of the jobber in distribution of its paint, but it very well understood that the elimination of the jobber imposed upon it the necessity of establishing contact with its dealers of that intimate character which generally exists between jobbers and dealers. The educational campaign very effectively served this purpose. Thus, even in the field of those products not essentially jobbing in character it is necessary to assume some of the burdens and responsibilities which are ordinarily left to the jobber. But so long as the manufacturer finds it to his advantage to assume the functions of middlemen in order to get more effective outlets for the products of his factory, no one can successfully state just what fields will be left to the jobber.

While manufacturers are getting effective distribution of paint without the help of the jobber, it is also true that nearly all hardware jobbers carry paint as a regular part of their stocks and not a few of them do a large business in private brands. In view of the fact that manufacturer distribution is making inroads on goods of this character it should be apparent to jobbers that the private brand is a doubtful asset. But for the private brand the number and character of goods falling within the "jobbing" field would undoubtedly be greater.

Uniform Discount System

In the book trade it is customary for publishers to sell to retailers on a sliding scale of discounts ranging from twenty-five per cent on single copies up to 40% on one hundred copies of one title. Few American publishers have a separate discount scale for jobbers and the only way in which the jobber can engage profitably in the book business is to buy in such quantities that he is able to gain the largest discount. Thus it appears that the book trade employs the same discount that the Proctor & Gamble Company uses. It follows that the jobber can buy books or Crisco in sufficient quantities to realize the maximum discount and resell to retailers on a basis which will insure them a profit. Such terms of sale may lead to heavy buying on the part of the dealers and it certainly has this effect where the dealer's business justifies it. This system of discounts, therefore, promotes the growth of retail establishments and narrows by so much the chance of the jobber to survive. Thus, it is no wonder that book jobbers are few in number—now being limited to about a dozen

concerns, and some of these find it to their advantage to do both a wholesaling and retailing business.

Finally, there is a field of distribution in which the jobber is practically without a place. Machinery often comes within this field, since the dealer may draw his stock of such goods from a small number of concerns. On the other hand the manufacturer does not require a large number of buyers to make a market, particularly if his factory is comparatively small. By advertising in class journals which reach prospective buyers of just the right type a sufficient number of buyers may be found in each of the many remote communities to insure a fairly stable market for the product of the factory, and this may be delivered directly to the consumer without the services of a middleman. Any product of a highly technical character may be sold directly to the consumer by the manufacturer because no one else is equipped to demonstrate it to the consumer. In general, when the factory product is of such a character that the manufacturer must go to great lengths to obtain cooperation with jobbers or dealers the question of distribution without one or both is bound to present itself for consideration.

Tendency to Disregard Jobber

Just how far the tendency to get distribution without the jobber will go will depend upon several factors. Among these (a) the nature of the commodity will have a good deal of weight; (b) the strength of the jobber in the field must always be taken into account; (c) the economic power of the manufacturer is also a vital factor since it will determine (i) his ability to carry through an organization of a distributive mechanism which will justify its cost and not compel him to revert to the jobber distribution. How amusing it would be to the jobbing world if the Proctor & Gamble Company were compelled to give up its recent experiment and admit, with the N. K. Fairbanks Company, that the jobber-retailer approach to the market is the most efficient after all! Likewise the economic strength of the manufacturer (ii) will determine just how effectively he can back up his new approach to the market with advertising. This is the most vital factor of all. The advertising may be so effective that the manufacturer will not only dare to break with the jobber, but he will be able to wean the retailers away from their traditional allegiance to the jobber. It may be so effective that a sufficient movement of goods from factory to dealer or consumer will be gained in spite of the fact that the manufacturer has moved out of the sphere that is distinctly his own—that of manufacturing—into one to which he is essentially foreign—that of distribution. By such a step the manufacturer is brought face to face with problems of marketing—finding a channel to the market—and the problems of merchandising—finding ways to get an efficient movement of goods through the marketing channel selected.

Advertising Plays Important Part

In 1921 the Proctor & Gamble Company stood third in the list of America's fifty leading advertisers. The appropriation of the company came to

\$1,198,458—a rather impressive figure! Power to go so far in the use of advertising to support the present distributive system of the company does not give much ground for the hope of the jobber that that system will fail. The fact is that advertising is the great instrumentality which is making it possible for the manufacturer to take a hand in the distribution of his own products. It is the device which is narrowing the boundaries of the realm of distribution which is essentially the jobber's, and it is at the same time the most effective means which is within the reach of the jobber for the defense of his own position. But for the power of advertising the quantity discount open to jobbers and retailers on the same basis would not be a possibility, for the quantity discount has inherent objections which advertising alone can neutralize. It is generally recognized that the quantity discount encourages price-cutting, discourages small jobbers and dealers from pushing goods for which they pay higher prices than their more powerful competitors and, finally, it encourages over-stocking. The sales organization of the manufacturer and his advertising manager must be prepared to deal with these evils when a discount system that places the jobber and retailer on the same footing is adopted.

Jobber Must Justify Place

It does not greatly matter whether the question of jobber distribution be faced from the angle of the manufacturer of electrical goods or from the angle of the manufacturer of food products. The fundamental principle is the same. It can be stated in the words of the Campbell Company, viz., "We labor under the necessity of keeping our plant continually fed with orders, so that production may be uninterrupted and overhead costs kept at a minimum." It may also be stated in the words of the Western Electric Company, that "The electrical jobber, in order to prove his case, must show that the functions he performs in the distribution of supplies result in bringing the supplies to the consumer at lower prices than when distribution is made direct from the manufacturer to the consumer." The latter statement involves the same factors as the former, for the lower cost of electrical goods to the consumer is largely a matter of volume of jobber's sales. Without this volume the factory costs will be higher and the manufacturer may very well take the stand that jobber distribution which does not give the necessary volume of output for the most economical basis of factory operation is too dear. Suppose that it does cost the manufacturer more to carry on his own distribution than it would cost the jobber to do it for him, the additional cost of manufacturer-distribution may be more than offset by lower manufacturing costs. That is the fundamental consideration which will determine what marketing system the jobber will favor and that is the consideration which will determine the future of the jobber as an independent distributing agency. These various factors must all be considered by the manufacturer before he decides to abandon orthodox methods.



Where selling becomes merchandising—the new store of the J. C. Hobrecht Company at Sacramento, California, classed as second to none in the West

THEN AND NOW

By K. L. GRAHAM and R. S. PRUSSIA

SACRAMENTO, the fifth city of California, on August 2 became possessed with additional prestige with the opening of the new store of the J. C. Hobrecht Company, K at Eleventh St., and there can be no doubting of the prestige in this case, for on the authority of men capable of judging from a national viewpoint this new store at Sacramento is second to no other in the western part of the country.

The opening of Mr. Hobrecht's store is the culmination of a remarkable growth. In 1909 this firm started operations, specializing in the manufacture of electric lighting fixtures. The establishment was opened up at 1012 Tenth Street, and consisted of Mr. Hobrecht himself and a boy helper. This was the nucleus of what has now developed into one of the largest and most complete electrical concerns in the United States.

The year of 1913 witnessed such a growth of this concern that larger quarters were necessary, hence, the

business was moved to 1014 Sixth Street. Additional space allowed the addition of several new departments which included electric appliances, motors and wiring.

From this point on, the J. C. Hobrecht Company actively entered the construction field and by this time their reputation for good service and fair prices was so well established that to this day, Mr. Hobrecht has yet to furnish an estimate on any job which he has done. It is interesting to note some

of his larger installations secured in the above manner, which include: Loew's State Theater at Sacramento, \$18,000; the present home of the Sacramento Bee, the principal evening paper, and the Carmichel Irrigation District wherein was installed a 250-hp. motor and huge pumps.

The new store which now houses the J. C. Hobrecht Company is 80 ft. deep by 80 ft. frontage on the main street in Sacramento, K Street. Remodeling commenced July 1, 1922, and cost approximately \$10,000. Its



Back in 1909 J. C. Hobrecht started in the fixture manufacturing business in this establishment. He is shown with his one employe. Today his store is the most modern in the West. It covers over 20,000 sq. ft. of floor space and his staff of employes numbers fifty-two.



The main lobby of the store showing the tastefully arranged wicker furniture. Outside of the showcases, there are no shelves in this portion of the store. All stock is carried in the basement.



There is no question but that the windows can be utilized for various types of displays. They are arranged so that one large display may be used, or three small ones.



Another view of the lobby of the store showing the fixture display rooms in the background. On the mezzanine floor above are the offices, a lecture room, a shop where youthful radio enthusiasts may assemble sets and a radio laboratory.



Displays of various appliances are arranged in groups. This shows the corner of the store devoted to washing machines and appliances for the laundry. The lamp counter is in the background.

show windows are a very prominent part of the merchandising scheme, having 64 ft. frontage on K Street and 20 ft. depth on Eleventh. They are well adapted to the display of the particular classes of goods carried.

There are 6,400 sq. ft. of display room on the main floor which is divided into three sections, namely: the domestic labor-saving appliances, the



The windows of the new store lend themselves admirably to displays of any type. The windows have a frontage of sixty feet and are twenty feet deep.

electric heating appliances and stand lamps, and the fixture display rooms.

One very fine feature of the store is that no merchandise is shelved. Samples only are on display and this in a very great measure accounts for the roomy and refined atmosphere. No modern method of merchandising applicable to the electrical business has been overlooked and the desire to purchase is given a noticeable urge thereby.

Large balconies cover most of the store with the exception of the center and these are destined to form some very interesting and business getting innovations. On the left balcony as you enter the store arrangements are made for a public lecture room wherein will be given frequent lectures on domestic science subjects. It is also intended that these lectures will be broadcasted by radio phone from the broadcasting station which is at present operated by J. C. Hobrecht.

On the opposite balcony, Mr. Hobrecht has fitted up a radio construction room with suitable machines, lathes, etc., all well protected for the use of amateur radio enthusiasts. It is designed and planned that these coming "Marconis" may assemble their sets from material bought in the store under the guidance of a radio expert. Back of this room will be a radio laboratory.

On the balcony over the main entrance will be found the offices of Mr. Hobrecht and Mr. Beamer, and also the cashier and accounting department.

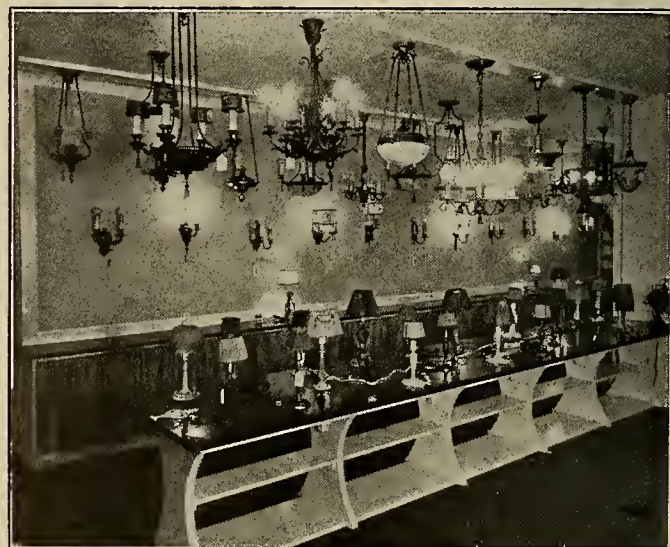
A radio telephone demonstration set with all appliances is to be found to the right of the entrance-way.

The lobby or main entranceway is attractively furnished in wicker furniture while blue and tan drapes are hung over the entrances to the various display rooms and departments leading from the main section. The absence of many appliances, shelves and showcases gives this room a distinctive atmosphere. The few appliances which are displayed are tastefully arranged. Leading from the main entranceway is a fixture room where various types of lighting fixtures are displayed. The highest types of merchandising methods have been used in the arrangement of this room, which may be darkened for better showing off the effects of various lighting units. Despite the fact that numerous groups of fixtures are hung from the ceilings and walls there is no feeling of overcrowding.

The entire store is over a huge basement which houses the fixture manufacturing, supply, motor, construction and shipping departments. The motor department is housed in a fireproof room. The office of the superintendent of construction is also in the basement. The entire store comprises an area of 20,000 sq. ft.

It isn't often that the inauguration of a new business home attracts such a throng as attended the opening of the spacious and handsome new quarters of the J. C. Hobrecht Company on Wednesday evening, August 2, 1922. The office and show rooms were decorated with scores of beautiful floral offerings from friends. A rough estimate of the number of people who attended the opening totaled nearly 2,000.

The growth of the J. C. Hobrecht Company with its two employees in 1909, to one of the foremost contractor-dealer establishments, with fifty-two employees at the present time, is the story of the general



One of the three fixture display rooms leading from the main lobby of the store. The rooms may be darkened to better show off the fixtures.

increase in the use of all manner of electrical appliances, coupled with the rapid development and distribution of electricity in California. Coupled with this is the business acumen and foresight of the owner, J. C. Hobrecht, who has kept pace with the growing "electrical age" by the application of every new idea in merchandising his goods.

Lack of Knowledge Cause of Most Power Company Complaints

Investigations Conducted By San Joaquin Light and Power Corporation Show Ignorance of Electricity Is the Cause of the Majority of Consumer Complaints Received By That Company

By C. B. MERRICK

ALL complaints which consumers make to their power companies can be divided into three classes, the first and second of which are real complaints and imaginary complaints. When a consumer complains he usually has a firm conviction that something is wrong, and the condition must be corrected or this conviction changed before the consumer is satisfied. A few consumers belong to the third class and enter complaints in order to withhold payment of their bills, but this happens only with certain consumers who become known to the collection department. However, these complaints require just as careful attention as the others.

The Inmar Investigating Committee, appointed by the state senate to investigate the decisions of, and complaints against the California State Railroad Commission, recently toured the state and held public hearings. They reported that "The primary reason for complaints against the power companies is due to misunderstandings between the public and the companies."

The San Joaquin Light and Power Corporation recently conducted investigations calculated to determine what proportion of the total complaints coming into their complaint department were legitimate and which were not, and from what class of consumer they originated. Also to show how many corresponding investigations were initiated by special request of the consumer's department or other employees of the company. Tables showing this analysis are given later in this paper. It was found that where the complaint was real and some error had been made in the meter reading or in the calculation of the bill, the settlement was easily handled. This applied also to the few meters found out of adjustment and registering fast.

But on the other hand, where the complaint is imaginary, and some definite cause such as seasonal variation, or exceptionally cold weather with resultant use of electric heaters, has caused the increased bill, special diplomacy was found to be a first requisite for persuading the consumer that the company is fair dealing and its employees anxious to satisfy the consumer as well as themselves that everything is correct. In these cases the psychological effect is an important factor. The employee is the company to the average consumer, and the employee who is overbearing or who shrugs his shoulders and says "that is not my job," or just "you have no kick coming," is creating unfavorable rather than favorable "public opinion."

An article recently appearing in the Pacific Service Magazine gives some valuable advice to employees who handle complaints. A quotation from this article states:

"As a way to bring about this elimination of many complaints, I would suggest that you thoroughly familiarize yourself with that branch of the work in which you are occupied, then endeavor to absorb as much as possible of the other branches.

"When confronted with a complaint, whether on the job, in the lodge room, at a friend's home, or at your church, endeavor to explain to the complainant's satisfaction. Even if it is something with which you are not thoroughly familiar, do not let it go unchallenged or unattended to. Refer it to some one who does know and who can give the satisfactory answer."

Results have shown that the investigator of a complaint should be very careful about his method of procedure. It is important that he should get all available information, such as previous readings, average consumption, and a check of the bill calculation, before going on the job.

Suggestions to Employees

The following suggestions directed to the man who handles the consumer's complaint have been found by the San Joaquin Light and Power Corporation to be very effective.

The consumer must be carefully approached as his confidence in your later statements is affected by his first impressions. The proper approach can often be determined by the style of the complaint, as the wording usually indicates whether or not the consumer is acquainted with electrical terms. Later examples will bear out this statement.

Ask for the consumer by name. Introduce yourself by name, and if possible present your card. Continue to call the consumer by name and he will return the favor, referring to the card if he forgets.

The characteristics of the consumer are important. If he is a busy business man, then waste no time. If he is an engineer interested in the details of your investigation, give him the details he desires. If he is inclined to talk, listen patiently while continuing the investigation. He will probably quote cases of ten years ago when "Such and So Electric Co." of Arizona or New York tried to cheat him but he caught on and refused to pay the bill. But let the consumer do the talking, until your check of the installation is complete. Be careful not to voice any conclusions before this check is completed. The only positive statement made to the consumer prior to that should be that the company will correct any error. To accomplish the desired result, the investigator should have full authority to report to the consumer and make any adjustment found necessary.

Each case should be treated as an individual one. Every consumer likes to feel that he is entitled to special service and any interest shown in his per-

sonal affairs is usually appreciated. Guess what he is interested in and direct the conversation into those channels, at first, to gain the confidence or good feeling of the consumer. More imaginary complaints are settled after this confidence is established by discussing the consumer's new grocery store, and admiring the antics of the five-year-old son, than by talking only gear ratios, load factors, or disc constants.

Ask leading questions that will tend to bring out the actual facts or the consumer will probably not tell you of some condition that existed, and which had been entirely forgotten until you asked the question that tied in the condition with his complaint. A query about blown fuses will often reveal a defective iron cord that has been repaired, or other similar trouble.

The findings of the investigation, whether or not there is an error, should always be given the consumer in order to permanently satisfy him.

curred, this change being either an increase or a decrease. In this way many "complaints" are forestalled by previous action on the part of the company, a service which is appreciated by the consumers.

This analysis also shows that of the 180 complaints of high bills, 163 were made by lighting consumers and 17 by power consumers. Of these 180 high-bill complaints, 84% or 151 were reported back as having "no error." This indicates the importance of the proper handling of the complaint, as in most of the cases no error was found. It also indicates that the largest proportion of complaints is due to misunderstanding, or to some condition with which the consumer is unfamiliar, such as the change in artificial lighting hours between winter and summer. This is readily verified by a study of the increase in number of high-bill complaints as the winter season approaches.

This analysis is shown in tabulated form, below.

CONSUMER COMPLAINED							CONDITION FOUND		
Nature	Light		Power		Total		Nature	Total	
	No.	%	No.	%	No.	%		No.	%
(1) High Bill	163	34	17	3	180	37	No error	151	31
							Meter misread	22	5
							Meter defective	3	1
							Accidental grounds	4	1
(2) Miscellaneous	63	13	26	6	89	19	No error	46	10
							"Creep" due to accidental grounds	5	1
							Meter creeps	26	5
							Miscellaneous	12	2
Investigations Requested by Employees							No error	62	13
(3) Meter Defective	96	19	42	9	138	28	Meter defective	61	13
							Meter overloaded	9	2
							Not in use	4	1
							Misread	2	—
(4) Inconsistent Readings	13	3	4	1	17	4	No error	7	1
							Misread	10	2
(5) Check Installed Load	—	—	59	12	59	12	Information only	59	12
Totals	335	69	148	31	483	100		483	100

Results of Investigation

A detailed analysis of nearly five hundred investigations made by the San Joaquin Light and Power Corporation reveals the following proportions between "consumer's complaints" and investigations initiated within the company.

	No.	%
"Consumer's Complaints"	269	66
Investigations by company	214	44
Total,	483	100

The above "consumer's complaints" were the ones that could not be settled by casual discussion in the office and required one or more visits to the premises in order to clear. Often they required many visits. On the other hand it does not include the miscellaneous activities instigated by the company, such as check readings, or analyses of accounts for proper rate, resulting in advising the consumer of a better rate for his service. It covers the cases, originating largely in the consumer's department, where an abnormal change in consumption has oc-

The heading, Inconsistent Readings, covers cases which could not be cleared by check readings, which have been previously made in each of the 17 cases listed.

The net result of the foregoing discussion and analysis is that electricity is considered a marvelous and unfathomable mystery by most consumers, even well educated persons using strange terms to express themselves in their complaints. Fact is stranger than fiction, as is shown by a few examples of letters received by the complaint department:

1—"The power is not strong enough to run Electric Iron except spasmodically and the Spirit in the meter that usually revolved in lively manner sometimes Crawls and again won't move at all."

(A bad fuse was responsible.)

2—"For the last five days my meter goes galloping at a fearful rate, making such a noise that one can hear it in the next room from which it is placed. It at least requires oiling, or some attention paid to its mechanism."

(This meter was 300% overloaded.)

3—"Please chekt over my electric light bill I use only one glob in all my please and only 2 ours per day there must be some mistek."

4—"I am perfectly willing to pay for what I get so there is only one of three things the meter is on the blink or the reader has made a mistake or the co needs the money or possibly someone uses the juice in my Absence. Whatever the cause I think I am paying \$1.53 for something I did not get."

It is apparent from the above that the public must be educated in electrical matters. There is much merit in the "Letter to the Editor" by J. W. Melhorn published recently in the Journal of Electricity and Western Industry suggesting that this education should start with the matter of replacing blown fuses. This would be one long step in the

right direction resulting in benefits to the industry, for it would:

1—Take the mystery out of the word "electrical."

2—Teach the public to distinguish between quality installations, and slipshod, unsafe jobs.

3—Save the power company and ultimately the public, the cost of this replacement service.

This education is well within the limits of possibility, for a public that can master the mechanism of an automobile and the intricacies of wireless telephone, can surely grasp the details of testing for and replacing a blown fuse.

Developments in Federal Water Power Act Administration

Recent Statements of Government Officials Can Be Taken as Indicative of Position
of Federal Power Commission on Colorado and Columbia River Development.
Stand on Question of Depreciation Is Outlined

By PAUL WOOTON
Washington, D. C.

IT is becoming increasingly evident that Congress must decide in the near future whether or not the Water Power Act is to apply to all water powers or whether exceptional powers are to be removed from the jurisdiction of that law. While very strenuous objection has been made to some phases of Henry Ford's offer for the Muscle Shoals properties of the Government, there seemed to be great indifference as to whether or not the project was approved for a 100-year period and taken out from under the Water Power Act.

An active effort is now on foot to secure an exception in the case of the St. Lawrence. The same is true of the Columbia and of the Colorado. In that connection great significance is attached to a letter written by A. P. Davis, Director of the Reclamation Service, to P. G. Spilsbury, president of the Arizona Industrial Congress. The letter is thought to reflect the views of the Secretary of the Interior. In that letter Mr. Davis says:

"The early and economical development of the resources of the Colorado River depend upon the adoption of a policy which will insure the development of a quantity of power sufficient to permit its delivery at reasonable prices and in a location where this power can best be marketed. In considering the development of the Colorado River years ago the whole field was before me and I had at my disposal practically all the available information then existent. In shaping the investigations this was done with a view to the earliest possible development in a manner best adapted to secure the maximum results from the natural resources. I found that the development of power on the Colorado River required a large amount of storage in order to utilize the water supply and that, therefore, a site must be selected where a dam could be built that would furnish head for power and in a few upper contours store a large quantity of water so as to regulate the flow and thus greatly increase the amount of available water for power development. This storage and its use for power, will automatically so regulate the river as to meet the needs of irrigation for many years to come without interfering with the power development. By increasing the storage capacity by a moderate increase in height of dam, we can secure a large additional storage, which taken in conjunction with the other solves the problem of flood control so vital to the valleys now irrigated and to be irrigated from this river in Arizona and California.

"It was also important to have this power development so located that it would be accessible to the great power markets on which it must depend for its feasibility. The markets of Arizona, while important, are insufficient to justify

the most economical development of the power of the Colorado River, and in order to secure the lowest price for power needed in Arizona, it is certainly wise and very desirable to so plan the work as to secure the cooperation of other markets, especially those of California where the population and consequent power demands are largely concentrated. The only site on the Colorado River which fulfills these conditions of most economical development is that proposed in Boulder Canyon. No other site has the necessary storage capacity except the one in Glen Canyon, and this is so far from the necessary markets that it is not at present available as a power site, and is above so much of the drainage area that it does not solve the flood problem.

"These are the reasons for the selection of the Boulder Canyon site, which was made before people partisan on this subject, and the matter could be and was considered judicially. Power can be developed at that point as quickly as at any other and much more economically because by the nature of the lake formed by a dam of given height, it will develop far more power than the Diamond Creek or any similar site, and while equally accessible to the markets in Arizona it is so located that, by the cooperation of other power consumers, Arizona can obtain its power far cheaper at that site than at any other.

"When I drafted my report over a year ago, I was of the opinion that the prospects were poor for directing congressional appropriation for this work, and having in mind earliest and surest development, prepared my recommendations to permit the cooperation of all parties who would cooperate in this construction. This policy not only received the instant opposition of those who desired the vast resources of the Colorado River turned over in bulk to them, but I found that after due consideration, the Secretary of the Interior believes these resources were too important to pass out of the hands of the Government representing the whole people and that they should be developed for the benefit of the people by their trustee, the United States Government, which is the only power that can fully and completely coordinate all the resources of the river and the conflicting interests of nations, states, municipalities and corporations.

"Perceiving the importance of his active interest and support, I gladly change my recommendation to that of which you know. After full investigation throughout the basin, Secretary Hoover has reached the same conclusion that is embodied in my recommendations and is approved by Secretary Fall. Secretary Hoover, as chairman of the Colorado River Commission, has given the strongest kind of testimony in favor of this plan before the committee which is considering the Swing bill. The provision reserving to the United States the control of the Colorado River, which occurs in the first section of this bill, was not suggested by me, and I find it does not meet with the approbation of some of the public spirited people in Arizona. I have no doubt its elimination could be secured if desired, and such other reasonable amendments can be made in the legislation as may be necessary to preserve all interests.

"If the Arizona Industrial Congress will get behind the pending legislation, it can secure all reasonable modifications, and I believe the bill can be passed soon, and that this is the most promising means of quick development of power on the Colorado River, as well as that of securing this at lowest cost and securing the greatest economy and conservation of the resources.

"The Secretary of the Interior has by careful study of the situation reached the conclusion that the Federal Power Commission does not have under the present situation the jurisdiction over the Colorado River that was implied in the Water Power Act, because, since its passage, Congress has passed two acts inferentially at least reserving certain disposition to itself. The President has approved this attitude and the administration is now committed to the policy that, until Congress has expressed itself positively, no license should issue from the Power Commission. This being the case, the real friends of quick power development will get behind this legislation and try to put it through, or at least secure the early disposition of the question.

"I have no jurisdiction over the Power Commission or its acts. Its policies are settled by its members or by their superior officer, the President of the United States. The Reclamation Service is for the earliest and most economical development of all the resources of the Colorado River for the benefit of all the people who can enjoy them. In loyalty to this subject and to the public interest, I cannot take any other attitude than to favor the early construction of the Boulder Canyon dam."

An amendment to the Water Power Act will be required, the Federal Power Commission has ruled, before it will be possible to liberalize the depreciation regulation to which strenuous objection has been filed by representatives of the electrical industry. An extract from the minutes of the Federal Power Commission's meeting held on July 26 sets forth the detail of the situation with regard to that regulation:

"The Executive Secretary stated that these questions had arisen on account of certain claims made by representatives of the National Electric Light Association at a hearing before the Commission November 21, 1921, that the regulations of the Commission now in effect exceed the authority of the Commission and are not in conformity with the provisions of the Federal Water Power Act. He stated that in view of the fact that the regulations had been attacked on the grounds both of law and of policy it had seemed desirable to secure a legal interpretation of the requirements of the Act and of the powers of the Commission with respect to depreciation; that accordingly a careful study of the Act, of similar state statutes, and of decisions of state courts and commissions had been made; that the National Electric Light Association and the National Association of Railway and Utilities Commissioners had been invited to submit briefs and had done so; that these briefs, together with the opinion of the Chief Counsel, had been submitted to the chief law officer of the three departments; that the opinion of the Chief Counsel had been concurred in by the Solicitor of the Department of Agriculture and by the Judge Advocate General of the War Department, and that he had been informed that the opinion also had been concurred in by the Solicitor of the Interior Department.

"The Chief Counsel, after reviewing the use of the word 'depreciation,' in other provisions of the Act and in Federal statutes in pari materia, and as defined in decisions of Federal courts and Federal and State commissions, holds that the primary purpose of accounting for depreciation under the Federal Water Power Act is that reserves may be established and maintained sufficient for offsetting the reduction in service value due to accruing depreciation from whatever cause, and for maintaining the original investment unimpaired and adequate for renewing and replacing, so far as respects their original costs, units of equipment or structures when their useful lives expire. He is of opinion that the Act requires an accounting for depreciation substantially as set forth in the existing regulations of the Commission; that such regulations are not inconsistent with the Act, but on the contrary are necessary and proper for the purpose of carrying out the

provisions of the Act; that the definition of depreciation as proposed by the representatives of the National Electric Light Association and the amendment of the regulation proposed by them with respect to accounting for depreciation are not in conformity with the Act, and if adopted would not make it possible to carry out the provisions of the Act; and that the Commission is, therefore, without authority to amend Regulation 16 in the manner proposed by the representatives of the National Electric Light Association.

"The Executive Secretary further stated that he was not convinced that the provisions of the Act with respect to depreciation were in conformity with the wisest public policy, or would be in the best interests of the rate payers in the long run; that he believed the question should be approached primarily from this standpoint; and that if upon further consideration it should appear unwise to require the full accrued depreciation to be taken up on the licensee's accounts that steps should be taken to secure an amendment of the Act. Unless and until the Act is amended, he recommended that Regulation 16 be amended so that it shall be optional with licensees whether they account for depreciation on the 'straight-line' or the 'sinking fund' basis; and that the Executive Secretary be authorized to confer with the Water Power Development Committee of the National Electric Light Association, or other interested parties, with a view to presenting to the Commission proposals for such a degree of flexibility in annual charging of accruing depreciation as will give due consideration to the maintenance both of the financial credit and of the capital assets of the licensee."

With regard to the accounting regulation, it is believed some liberalization can be effected and a conference on the subject is to be held early in September. At that time members of the staff of the Federal Power Commission will confer with representatives of the Electric Light Association and the National Association of Railway and Utilities Commissioners.

In a letter to the Federated American Engineering Societies, the Secretary of War has the following to say in regard to lack of personnel on the part of the Federal Power Commission:

"The Commission is seriously handicapped in the administration of the Act on account of inability to employ its own personnel. It has had placed upon it the greatest task, with respect to water powers, the Government has ever had, at a time when the utilization of water power is more necessary than ever before. The Act made a definite pronouncement of a national policy in water-power development. It created a Commission to carry out that policy; but it gave it no means to do so. The Commission has been obliged to depend exclusively upon such assignments from the several departments as these departments were willing to spare. The departments have had their own forces cut to a point where they are unable to perform either in Washington or in the field the work required of the Commission under the Act; and even if they had the numbers and the funds to pay them they do not have employees with a training or an experience required for the performance of certain of the duties of the Commission. As a necessary consequence the Commission has been forced to omit altogether action upon important matters which the Act requires of it. Furthermore, with no personnel of its own and with no control over the personnel of the departments engaged upon its work (except for the small number directly assigned to its Washington office), it is not possible to organize the work on an effective basis, or to make the most economical use of the personnel actually engaged on the Commission's work or of the funds actually expended for such purposes.

"In its first annual report the Commission said:

"What is seriously needed in the interest of adequate administration of the act is a small organization of trained and experienced men capable of meeting intelligently the important and perplexing engineering and economic problems which are constantly arising and upon the correct solution of which will depend the value of the legislation and, in no small degree, the future of the electric power industry."

"Nothing has happened since to alter the situation."

Vocational Training for Colorado Mine and Steel Workers

Experience of Colorado Fuel and Iron Company Indicates That a Reservoir of Trained Men May Be Provided Within the Company By Opening Avenues of Advancement For the Workmen

By EDWARD S. COWDRICK

THE auditorium of the miners' Y.M.C.A. held a group of serious-faced men, most of them in their working clothes. Some were coal diggers, some mule drivers, some mechanics of various grades. The superintendent of the mine was there; so were the foreman, the store keeper and the school principal. A young chemist from the near-by division headquarters of the company was speaking.

"Now, some of you fellows," he said, "were in vocational classes last year, and found that you got about so far in mining or mechanics or electricity and then couldn't go any farther because you didn't know mathematics, or had forgotten what you did know. The other day a man down in the Trinidad district told me he thought it would be a good idea to have classes in arithmetic. What do you think of it? Remember, we're not going to try to make mathematicians out of you, or teach trigonometry or calculus, but if you want to learn enough percentage and square root and stuff of that kind so that you can calculate the power of a jack-screw or the flow of air through a mine, we'll start a class. Any of you who are interested, stand up."

Nearly every man in the room rose. Some were foreigners who probably never had learned to add or multiply. The well-educated "super" got onto his feet, a somewhat sheepish grin on his face as he said, "Well, I've forgotten so much mathematics that I'm sure it will be a good thing for me to study up in it."

It was at a Colorado coal mining camp of the Colorado Fuel and Iron Company. The supervisor representing the State and Federal Board of Vocational Education was accompanying the company supervisor on a tour of the properties, inspecting classes already in operation and starting new ones where the miners had asked for instruction.

Five Years' Work Proves Results

The Colorado Fuel and Iron Company, known as an advanced corporation in respect to all matters relating to the welfare of employees, has had more than five years of experience with vocational training. It was one of the first companies in the West to take advantage of the Smith-Hughes vocational education act, under which federal and state funds are available to assist in the training of workmen.

It is the purpose of the Smith-Hughes act, so far as it concerns training of workmen in industry, to give the man in the mine or the shop the education which will enable him to be a better worker on his job and become fitted for a better job in the same industry. Thus, when a coal miner is taught the principles of scientific mining, including safety practices and mine management, he may become qualified for a position as fire-boss or foreman; when he is

taught mine mechanics, he may become material for a blacksmith, machinist or other workman of superior standing.

This instruction, therefore, is of advantage to the workman himself and to his employer. For the workman, it opens up avenues of advancement previously closed on account of his lack of training. For the employer, it provides a reservoir of trained men within his own company upon which to draw for skilled mechanics and even officials. This is of much importance to the employing company. Skilled mechanics are none too plentiful; men fitted for official place are decidedly rare. This was particularly true during the period of wartime wages, when often a man fitted for a foreman's position was unwilling to take it, because he could earn more as a laborer than as a minor official.

Both Employer and Employee Benefit

Then, particularly in the mining industry, it is valuable from the standpoint of both employer and employee for as many workmen as possible to be familiar with safety practices and general mining technic. Most of these workmen may continue to dig coal or ore, but the very fact that they have received training makes them more valuable to themselves and their employer. One workman familiar with dangerous gases may prevent a disastrous explosion and thus save his own life and that of hundreds of his fellow employees. One miner who thoroughly understands the principles of timbering may set an example which will prevent many dangerous falls of rock.

At properties of the Colorado Fuel and Iron Company the first experiments with vocational training were in the Walsenburg, Colorado, coal mining district, where classes were started more than five years ago with D. A. Stout, now manager of the company's fuel department, as supervisor without pay. These classes have been conducted continuously. One mechanic in the big Walsen mine has taught classes every year.

From the modest beginning in the Walsenburg district the movement spread gradually, and not without obstacles and discouragements, to the other mining districts in Colorado and Wyoming and to the Minnequa Steel Works, operated by the company at Pueblo, Colo. H. C. Miller, a chemist who had been interested in the vocational training from the start, became supervisor and teacher-trainer for the company, giving fully half his time to the starting and inspection of vocational classes and to the selection and training of instructors. Much assistance has been rendered by C. G. Sargent, state director of vocational education, and by R. V. Billington, state supervisor.

As prescribed by the Smith-Hughes act, vocational training is under the immediate direction of the local boards of education. Instructors are paid jointly by the school districts, the state and the federal government. In most of the mining communities the company is practically the sole taxpayer, and thus furnishes its share of the joint fund. At



Vocational training class in mine mechanics at the Walsen coal mine of the Colorado Fuel and Iron Company

times it has made direct contributions, where school district funds were insufficient to furnish the local portion of financial support.

Coal Miners Welcome Opportunities

Vocational training has proven especially popular at the coal mines. Sometimes as many as four classes, each on a distinct subject, are taught at one mine at the same time. The most popular branches are mine mechanics, including wire rope splicing, bench work, pipe fitting, reading blue prints and sketches, laying out work and the operation of the lathe and the drill press; mining, with a course of study designed to enable students to pass the state examinations for foremen's and fire bosses' certificates; electricity, in which instruction bears directly upon electrical appliances used in and around the mines; washery practice, relating to coal washers, and mathematics, intended to enable the students better to comprehend the mechanical and scientific branches.

Instructors usually are drawn from the working forces. The electrician or the head mechanic may teach a class composed of coal diggers and officials. Sometimes the mine superintendent is drafted into service as an instructor. Occasionally the camp school master adds an academic flavor to the training, especially when a class in mathematics or other non-mechanical subject is asked for. At the iron mine at Sunrise, Wyoming, a couple of years ago the mine carpenter conducted a large class in mechanical drawing and blue print reading, with students drawn from every grade of employe, from ore shoveler to clerk or engineer.

Instruction is of the most practical nature. All scientific "frills," except those absolutely essential to the understanding of the subject in hand, are discarded. The classes in mechanics usually meet in the mine blacksmith shops, and get their instruc-

tion largely from actual work. Incidentally, some of these classes have done considerable amounts of work that otherwise would have been carried in the expense account of the mine. At times, when a job of electrical wiring is to be done, it is turned over to the class in electricity, which completes the work under the supervision of the instructor, who is pretty likely to be the chief electrician of the mine.

At the conclusion of each course, the student is given a certificate showing the number of lessons he has taken. Many of these men later have passed the examinations given by the State Board of Coal Mine Examiners and have taken positions as fire bosses or foremen. Others have become qualified electricians or machinists. In many cases, this taste of education has given the workman his first ambition to better his condition and to give his children the educational advantages he lacked in his own youth.

Not directly connected with vocational training, but closely allied to it in spirit and purpose, is the program of general education and Americanization conducted by the company and by the industrial Y.M.C.A., which operates clubhouses and carries on social service work at various properties. Particularly at the Minnequa Steel Works this program is complete and thorough. There the Y.M.C.A. each year conducts Americanization classes for aliens seeking naturalization, giving instruction in English, civics, American history and other appropriate branches. Teachers from these classes are sometimes educated foreigners. A young Russian has been unusually successful in teaching English to Slavish workmen. The work in these citizenship classes has been highly commended by the government naturalization authorities.

At the Steel Works Y.M.C.A. apprentice classes also are conducted and a considerable amount of general educational work is done. A somewhat unique feature is provided by the program of the Woman's



A class in mine gases at one of the coal properties of the Colorado Fuel and Iron Company. On the blackboard are chemical formulae relating to the gases studied.

Division, which does important educational and social service work for the benefit of the wives and daughters of the workmen. Classes in domestic science have done much to raise the standards of family living, particularly among the foreigners.

Eliminating the Waste in Industry

Shortcuts in Management and New Power Applications Which Have Been Adopted in Western Industrial Plants for Eliminating Waste, Increasing Production and Cutting the Cost of Manufacturing Processes

By LOUIS F. LEUREY
Industrial Electrical Engineer

Automatic Machinery Promotes Health in Industrial Plant

In many classes of manufacture competition becomes so keen that small component parts of a standard product must be produced at an extraordinarily low cost or else the main product cannot be marketed. This economic necessity has been largely responsible for the introduction of female labor in many factories where deftness of fingers and willingness to increase production to the utmost has practically eliminated male competition.

This very willingness to stretch their efforts to the breaking point, however, has been responsible for the rapid physical decline of many women workers with inevitable nervous breakdown and retirement from production.

A number of companies have met this condition by substituting highly developed automatic machines which under the guidance of one operator who is not under strain, will produce as much as 5 to 20 women working under a breaking strain.

The dry battery business is one which has gone a long way in the substitution of automatic machinery for piece work which was physically destructive to the operators and lacked that quality of steady and uniform production that was desired.

In the manufacture of bobbins for certain types of dry batteries the average women operators would only make 500 to 600 per day as beginners. After several years of application it was possible to reach a production of 2,000 bobbins per day.

THIS DEPARTMENT

will be devoted to a discussion of the various problems of waste in industry as they affect western industrial plants. Readers are asked to aid in the solution of the most vital problems facing industry by sending in accounts and pictures of the various practices for combating waste, which have been adopted in plants with which they are familiar. It is only by thus co-operating with Mr. Leurey that the fullest service can be rendered. Space rates will be paid for all material which is published.

At this speed, however, the physical strain is so great that the operator can only pursue this trade for a few years.

An automatic machine has been perfected by which one operator with little effort can make 6,000 to 8,000 bobbins per day and the product is of an exact and uniform character.

Any companies having operations that require intensive manual effort in quantity production could well look into the question of developing automatic electrically driven machinery to do this work.

Receiver Type Pumps Conserve Heat in Sugar Mill

The Union Sugar Company, near Santa Maria, California, operates a 1200-ton beet sugar factory. This factory requires from three to four thousand boiler horsepower to furnish the steam necessary to the process of sugar production.

Approximately 58 per cent of the total output of steam is consumed in the evaporators and is returned in the form of condensate to the boiler room to be again used as feed water.

In the original arrangement of the factory these condensates were returned to a hot well and there allowed to mix with other condensates of various temperatures from different parts of the process.

It was found upon a careful study of the heat conditions in this sugar house that 31 per cent of the evaporator condensate existed at a temperature of 233 degrees Fahrenheit and that 27 per cent existed at a temperature of 308 degrees Fahrenheit.

Under the then existing system these hot liquids were allowed to flow into the open hot well at which point they flashed into steam and were thus reduced to 210 degrees Fahrenheit with all the incidental heat loss. Receiver type pumps were then installed and these hot liquids were pumped directly into the boiler feed water lines, thus effecting an excellent thermal saving beside lowering the temperature of the average liquid in the hot well to a point where it could be more successfully handled by the main boiler feed pumps and incidentally doing away with the objectionable steam vapors from the hot well.

The economies effected were as follows:

Annual Saving in Fuel Oil...	\$2,850
Less Fixed Charges amounting to 16% of \$7,000.....	1,120

Net Return 25% = \$1,730 per annum



Winding bobbins by hand in the plant of the National Carbon Company. In a few years the health of workers is completely broken down from the strain attached to labor of this kind.



Automatic electrically driven machines used for winding bobbins at the present time. These machines require no skill or nervous strain in their operation and do the work of three to four women.

Concentrated Motor Control Increases Efficiency

Establishment of Control "Stations" When Factory Is Designed
Cuts Labor Loss and Prevents Serious Loss of Output

As industrial processes have progressed to a state of more and more effectiveness, it has been increasingly demonstrated that careful planning must enter into the arrangement of electric drive and control in order that it may function efficiently with the general scheme of the manufacturing process.

In the past, the vast majority of electric work in industrial plants has been done in a very loose and inefficient manner. Motors have been coupled up to machinery and the controlling of these motors has been stuck around at various points in the factory which seemed to offer the least amount of effort in getting the equipment started for the first time. While this practice has apparently been cheap in first costs, practice has shown that motors controlled in such manner often prove very costly in practice.

In most manufacturing plants, there are definite "stations" or groups of machinery closely allied, all of which function towards the production of one certain feature in the main output with the control of motors scattered around at various locations and often on different floors. The starting of these "stations" has been very cumbersome and slow and accidental interruptions to the stations has resulted in very slow reinstatement of service, all of which is costly, not only in labor lost, but in the loss of output.

Waste of this type is easily preventable and requires only that the method of electric installation and control be given the same thought and study in laying it out, that is accorded to the machinery itself when it is grouped into a station.

Two general methods can be employed to effect this concentration of control. The first method is where starting devices are of the manual type, such as compensators and small oil switches. The illustration accom-

panying this article shows how, on one such station, 16 motors, all of 5 hp. or over, and 6 motors of under 5 hp., are controlled from a single switchboard, only 18 ft. in length with a height of 90 in. In this grouping the panels are fabricated from steel plates mounted on channel irons and the starting compensators are mounted directly on the face of this board. In the rear of the board and mounted directly behind the compensator which it controls, is an enclosed safety type disconnecting switch. The compensator and the safety switch are connected by rigid conduit. All of the safety switches are fed from a sheet steel bus compartment which is also mounted to the rear of the board. Thus, in a very compact space, is concentrated the control of 22 motors, all of which function and carry on one step in a group process. On this same board are mounted pilot lights and other signaling devices indicating steps in the general operation, and it is only a matter of a few minutes for an operator to start up the motor equipment on this entire station.

The other general method of accomplishing the necessary concentration in electric control, is by the use of automatic starting devices. This method has become increasingly popular in factory usage and the lumber industry which is now going almost exclusively to the electric drive, has adopted automatic starters as being practically standard practice. By this method and by intelligent layout of equipment with due regard to personal safety, it is possible to locate the motors and heavy starting devices in the basement of the mills where they occupy the least valuable space and yet these motors, even in capacities of 200 to 300 hp., can be started and stopped by push button control, directly from the sawyer's platform or from any of the sorting stations in the lumber mill.

As this idea of automatic starters be-

comes more generally adopted and as the manufacturers are able to increase their quantity production of this equipment, it is highly probable that in the near future this style of equipment will approximate the present manual equipment in first cost and will then, without a question, entirely supplant manual equipment in all modern and up-to-date manufacturing plants.

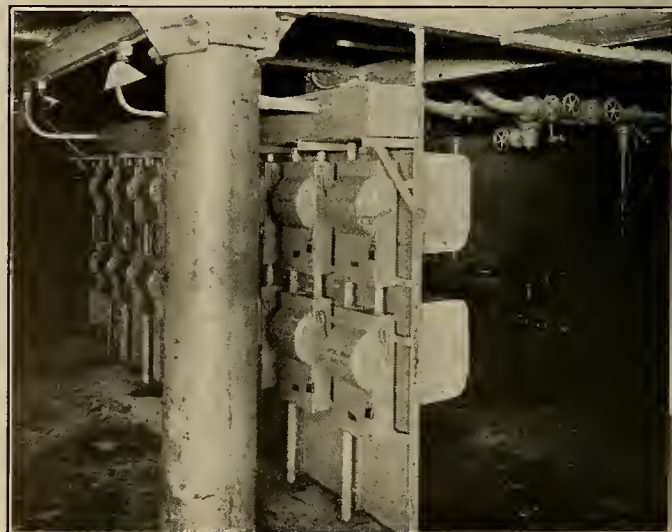
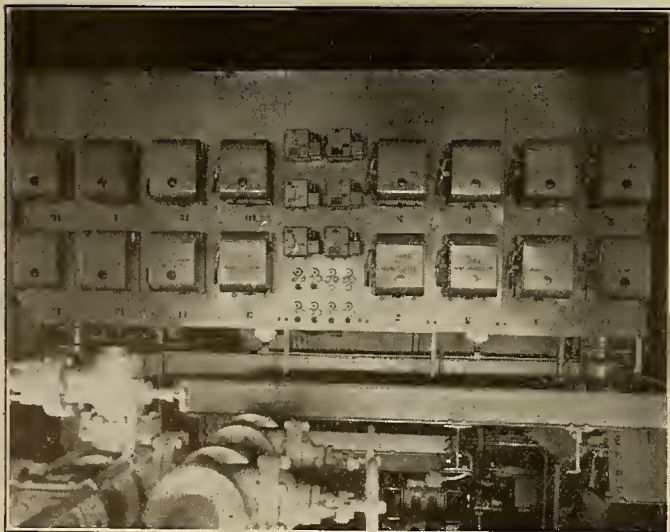
Salvage Department Saves Firm Thousands of Dollars

That a properly conducted requisition department under the supervision of one man can cooperate with the salvage department of a large power company to the extent that thousands of dollars can be saved annually has been demonstrated by one of the large California power companies.

It was found that through lax methods in checking requisitions for material from various sections of the company's extensive system, many opportunities of utilizing material which was lying dormant in other parts of the system were being overlooked. By discouraging the habit of holding material simply because there might be some use for it in the future and by having all such material shipped to one central point, it was found that a saving of thousands of dollars could be effected.

To cite one of several instances, there was the case of a newly opened district office which had to be furnished. It was found that there was enough furniture on hand from other offices to almost completely equip the new one and that a saving of \$500 was brought about.

By cautioning district managers and departmental heads in the indiscriminate use of requisitions, another large saving has been brought about. A rigid rule that in all cases except those where the need is immediate, all material must be secured by requisition, has been placed in effect. This is to discourage the practice of having the manager or departmental head make the purchase and send an invoice for the goods with the requisition. It was found that thousands of dollars were being lost through this practice.



Twenty-two motors are controlled from this centrally located starting station

Rear view of the same control panel showing the enclosed safety disconnecting switches

Western Dealer, Jobber and Agent

Business building suggestions for the store—Distribution and warehousing methods—Advertising and sales promotion ideas

Salt Lake Holds Annual Electric Cooking School

Story of the Servantless Electrical Kitchen Presented to 1,000 Housewives by Expert Each Day in Novel Manner

The fourteenth annual cooking school, conducted by the Salt Lake Telegram, was held in Salt Lake City the entire week beginning August 7. This year's school was the fourth one devoted to electrical cooking. The school was in charge of Miss Edith L. Clift, who has a national reputation as a home economics expert and demonstrator.

Age intermingled with youth, and the workingman's wife rubbed elbows with the woman of means, in the vast audiences that filled the ballroom of the Hotel Utah at each day's sessions.

Great interest and enthusiasm was manifested by those in attendance, as the story of the electrical servant in the house was unfolded by Miss Clift in her lectures and demonstrations. The housewife was shown, by actual application, the real meaning of electricity as an eliminator of drudgery.

An interesting program was arranged for each day, consisting of a lecture and cooking demonstration by Miss Clift, with discussions, cooking contests by those in attendance who cared to participate, in which valuable prizes were awarded to the winners, a free daily

fashion show, displaying fall apparel on charming living models, free daily motion pictures, and a daily musical program.

An electric range, an electric vacuum cleaner, and various other appliances were given away in the daily drawing for prizes.

Among the important facts which Miss Clift impressed upon her audiences were:

That efficient conduct of the home promotes national progress and contentment.

That many homes fail because of improper cooking.

That electrical servants have freed the American woman from drudgery.

That electric cooking is by far the most satisfactory, most efficient and most economical method.

That poor meals can be attributed only to a lack of training.

That it is easier to prepare food right than wrong when the housewife is properly informed.

One of the interesting features of the school was the large number of booths

entered as exhibits by various Salt Lake City merchants.

A nursery was maintained where mothers could leave their children, while they attended the lectures, with the assurance that they would be well taken care of.

A new record of attendance was established this year, the average daily attendance being approximately 1,000. At several of the sessions the attendance reached the 1,500 mark.

Success of the enterprise was assured through the cooperation of the Utah Power and Light Company, the Apex Electrical Company, the Capital Electric Company, the Edison Electric Appliance Company, the Intermountain Electric Company, the Parry Electric Company, the Westinghouse Electric & Manufacturing Company, and many merchants and other business establishments of Salt Lake City.

The use of electricity as an important factor in the science of home economy was convincingly brought out by Miss Clift throughout her talks, and the entire program was most interesting and instructive.

Some Business Getting Ideas From Southern California

In order to secure some starters in the use of an electrical ironer, a southern California dealer recently offered a cash inducement to the first five who would join a "club" which he was starting. He worked hard for the first woman, secured her order, then explained the offer to her and to others and, as with four additional users she would receive a cash bonus, she began to help him to secure other prospects. She willingly allowed the salesman to show the ironer at work in her home and spoke a good word for it.

With a false-face, wig, old hat and frame work covered with old pants, vest, shirt and other men's garments, a salesman arranged a humorous-looking old man bending over a wash tub. He worked up and down, his arms sliding up and down the wash board. A large streamer across the top front of the window read:

"ACT I. SUPPOSE DAD HAD TO DO THE WASHING.

See the window on the other side."

Walking to the other side the people saw a pretty dummy borrowed from a dry goods store, clad in neat gingham house dress and standing erect to show that the electrical washing machine beside her was no trouble at all. A streamer across the front of this window read:

"ACT II. IF DAD HAD TO DO THE WASHING

He'd soon put down \$10 on this machine!"



A typical audience at one of the sessions of the cooking school conducted by the Salt Lake Telegram during which the story of the electrical servantless kitchen was told to 1,000 housewives every day. The entire electrical industry in the Intermountain city cooperated in staging the school which is an annual affair.

A Few Suggestions for More and Better Business

THE STORE

New sign. Daylight lamps. For old sign. Better show window lighting.



THE GARAGE

Portable light. Motor driven tools. Air compressor. Automatic door opener.



THE SMALL BAKERY

Electric oven
Hot plate.



Some typical examples of where the contractor-dealer can go to get new business. All of the above pictures are from western cities.

California Town Features Electrical Rest-room

Electrical Industry at Salinas Tells Electrical Story in New Way During Annual Rodeo Week Celebration

A new way of selling the electrical idea—and one of putting it across under most favorable conditions, was hit upon at Salinas, Cal., during the recent "Big Week" celebration and annual Rodeo.

When the city fathers and the "Big Week" Committee commenced planning the parades, the concerts, the decorations and the fireworks, James F. Pollard, vice-president of the Coast Valleys Gas & Electric Company, with headquarters in Salinas, began doing some planning of his own. He said to himself, "There are going to be lots of strangers around town that week, and they'll be walking back and forth all two blocks of Main Street until they're tired and want a place to rest. Therefore a comfortable rest-room will draw crowds and an attractive display of electrical appliances will draw attention."

The result was that a vacant store was rented and the California Electrical Cooperative Campaign was called upon for assistance in putting on an exhibition that would cause the electrical message to linger with the crowds long after the "yip-yipping" of the cowboys had been forgotten. With the active support of the Salinas Electric Store, Posz Electric Shop, and Anderson and Doyle, the two windows were attractively trimmed with table appliances, lamps and a vacuum cleaner; the walls and ceiling were decorated with streamers of the official red and yellow of the celebration; and an inside display was arranged of a mangle, a range and a sewing machine. Comfortable wicker rocking chairs, borrowed from a local furniture dealer, welcomed the weary, and baskets of flowers and pots of palms lent an atmosphere of rest and repose. In the doorway a washing machine kept generating a goodly supply of frothy suds, and, incidentally, of interest among the passers-by, and out on the sidewalk a sign mounted on a seven-foot pole announced the location of a "Public Rest Room" where "Free Moving Pictures" were shown.

The result should be apparent. Offer anything "free"—offer a stock of old rusty cannon-balls, or a stuffed sword-fish, and watch the crowd fight for a sample, but offer free moving pictures and imagine the result. It looked like an exaggerated optimism when thirty-one chairs were put in, and yet there were times when people stood to watch the pictures. And, every picture told an electrical message. There were pictures telling of the elimination of discord and discontent in a home by the elimination of drudgery through electrical appliances; there were pictures telling of the rejuvenation of a farm by the use of electrical apparatus, and there were pictures revealing "The Secret of Electrical Convenience"—the convenience outlet.

The most interesting part of all was that people who had dropped in for a few minutes of rest stayed through the entire two hours of pictures, quietly intent upon the message they were receiving, and, as they went out many

inquired if there would be different pictures the next day. In fact, one evening a woman stopped to express her appreciation by saying, "These are better pictures than the one I paid to see at the — Theater this afternoon."

There is unlimited opportunity in this field for telling the electrical story in all its ramifications. For example, just inside the doorway of the Salinas rest-room was a table containing reading matter to help pass the time away between movie shows and this was an excellent means of dispensing small, agreeable doses of stock sales literature and other good-will publicity.

During the late summer and the fall there will be many county fairs throughout California and other western states, and each should offer an equally excellent opportunity for putting the electrical message across in its respective territory.

Denver Store Gives Labor Free on Appliance Repairs

The Silver State Electric Company, whose store is in the two hundred block on Fifteenth Street, Denver, repairs all household electrical appliances on an unusual arrangement. It charges the customer only the cost of the materials. It throws its labor in gratis. Nor is there any profit on the materials used. The sum charged is the cost to the store.

A Denverite does not have to be a regular customer of the Silver State store to qualify for this service, in fact its purpose is to bring to the store as many new faces as possible. Want ads are inserted in Denver newspapers giving publicity to the repair service. Some of these specify that the customer pays only for the materials. In others prices are described as "right." The ads are two or three-line messages.

The store has been using this method for several months as a "leader." The Silver State is a small store, with a frontage of not more than 15 feet. The company's principal activity is contract work. The appliance end cannot make a big splurge in display. Repair work at cost of materials, however, is an advertising stunt which is not prohibitive in cost and which, as the cost of want advertising is very small, accounts for something definitely done to get new customers at a known outlay. It costs the store something to repair an appliance for nothing, but this cost is small beside the good will won.

Irons are most commonly brought in for repair. Percolators and toasters provide many jobs.

The store is in down-town Denver, and repair work is pulled from all over the city.

The Silver State store is one of a nest of electrical stores. Within a stone's throw at this point on Fifteenth Street are three other electrical stores. Until recently there was a fifth store, occupying a corner, which only recently has moved a couple of blocks away.

These stores are not in the center of the down-town retail district, but on the border of it. There has been demon-

strated in that connection how competing stores, grouped together, markedly help each other. The old-fashioned way was to find obnoxious the sight of a near competitor, to wish him in another part of the town, or out of existence. It does not work that way in practice. Here is a block or so on Fifteenth Street, Denver, which is visited by many more electrical shoppers than it would otherwise be, simply from the fact that there is a concentration of merchants there.

What is not found at one store, the shopper can be reasonably certain to find at one of the others. He can compare goods and prices readily. The Silver State store cheerfully refers a caller to another nearby store, perhaps specifying a name, when it has not in stock what a visitor is looking for, and it gets customers referred to it in the same manner. Competitors in such a situation can do a great deal to make the section popular with shoppers, and as the district becomes popular with shoppers all the stores benefit.

There is a hint here for the electrical man about to pick a location. Get near other electrical stores. They will help you to get business, and you will help them.

General Electric Begins National House Wiring Sales Plan

National advertising to reach the ultimate consumer, the home builder and owner, with the advantages of complete and adequate wiring for homes, rather than the promotion of individual wiring devices, is the keynote of a particularly interesting sales plan just started by the General Electric Company. Local application of the results from this effort are to be centered directly in the hands of electrical contractor-dealers throughout the country, but in a new and different manner.

The general advertising offers as a special feature a booklet entitled "The Home of a Hundred Comforts," which explains the comfort and convenience of completely wired homes.

Particular attention is called to the importance of having wiring done by an experienced, skilled and reputable contractor who uses quality materials, and he is warned against accepting a low bid merely because it is low.

Instead of referring the contractors to the inquirers who may write in for the booklet, as has been customary in campaigns of this nature, the person writing for the information will be referred directly to the contractor-dealers in his vicinity and invited to discuss his problems personally with such contractors. This, it is believed, will save the time of contractors in calling on "prospects" who turn out to have no particular business to offer but simply wrote for the booklet out of curiosity, as many of course will.

A preliminary list of 3,500 contractor-dealers has been obtained by a thorough canvass covering cities and towns of 5,000 or more, and the list is one of bona fide contractors only. The plan is not, however, limited to those who use G-E material exclusively. It is announced that it is open to any contractor whose reputation assures thorough workmanship and high grade material.

Activities of the West

A Business Man's Department Devoted to Events and Developments in Western Industrial Centers—Including News of Interest to Readers in Public Utility, Industrial and Trade Fields

Jobbers Discuss the Contractor-Dealer Situation

Question of Sound Financing for Electragist and Discussion of Cooperative Campaign are Chief Topics at Del Monte

The contractor-dealer situation, with special reference to credit and financing, and the California Electrical Cooperative Campaign were the chief topics of discussion before the quarterly meeting of the Pacific Coast Division of the National Electrical Supply Jobbers Association at Del Monte August 10-12.

During the discussion relative to the credit of the contractor-dealer, many important suggestions were brought forth. At the close of the discussion of the Cooperative Campaign resolutions were passed assuring this activity the full support of the jobbers' association.

Speaking of the contractor-dealer situation, C. W. Fritz of the Republic Finance and Investment Company, San Francisco, dwelt upon the impossibility of the contractor-dealer carrying his own commercial paper. He emphasized the necessity of the various jobbers serving one district jointly hiring an auditor to ferret out the faults and check the leaks, concluding his discussion with the statement that "it was better to get hold of the contractor-dealer before his business got sick and help him as much as possible, than to wait until it is too late." E. W. Minor, president of the Pacific Coast Contract Purchase Corporation, told how the banks found it beyond their functions to handle the commercial paper of the contractor-dealer and described the organization of the various companies which have been formed to handle this phase of the electrical industry.

R. E. Fisher, chairman of the Cooperative Campaign, then presented a resume of the situation in the electrical industry as it affects that organization. In his concluding remarks he emphasized the fact that there is a definite need for such an activity at the present time with a greatly enlarged program. Tracy Bibbins questioned the soundness of the foundations upon which the industry had built in the past, arguing that the contractor-dealer had apparently not been as successful as had been expected in performing the merchandising function. He suggested that, in the future, three groupings might be necessary for the distribution of appliances, namely, the electrical contractor, the electrical dealer, and the drug store, hardware store and department store. He stated that all of these are important economic factors in the distribution scheme and that all should be recognized in campaign activities.

R. W. Holterman offered the suggestion that the auditor proposed by Mr.

Fritz be an official of the Cooperative Campaign, but W. S. Berry pointed out the legal difficulties which might arise. Charles Wiggen deplored the present work which is being done by the contractor-dealers who are beyond the sphere of the campaign activities and hoped that something might be done to raise the plane of this work. D. E. Harris, in speaking of the necessity of advertising, recommended that all channels of distribution of electrical goods be recognized and that a fund of at least \$100,000 be raised for advertising. Robert Sibley reviewed the work of the campaign, opining that if the scope of the campaign could be enlarged and the activity refinanced, an infinite amount of good might be accomplished.

Others who spoke along the same lines were Charles Listenwaller, Earl Alexander and J. A. Vandergrift.

In the golf tournament in conjunction with the convention, J. A. Vandergrift, Oakland, won the Deming trophy, while the Turner trophy and the jobbers' cup both were captured by C. B. Hawley, Salt Lake City.

Tacoma Planning Second Annual Electrical Exposition

An electrical show in Tacoma, Wash., tentatively set for September 26-30, is planned by electrical dealers, manufacturers and contractors of that city. This will be the second annual exposition, and this year's show is expected to surpass the splendid showing made last year. Radio apparatus of many forms will be a big feature of the show. The show will be held in the unused portions of the former Northern Pacific Headquarters Building, now belonging to the city. On two floors, there will be 23 rooms available for exhibits.

The real and personal property of the Yaquina Electric Company, Toledo, Ore., which was sold at sheriff's sale recently, was purchased by Seymour Bell of Portland for \$22,000. Improvements to the property will be made, according to announcement of Mr. Bell.

At a recent meeting of the city council of Canby, Ore., it was decided to offer the Molalla Electric Company \$7,787 for its properties within the city limits of the town of Canby. It is stated that the company is agreeable to sell at this figure and the recent sale of a \$10,000 bond issue for this purpose will make the early transfer of the property likely.

Cities Refuse Power Offer

Seattle and Tacoma Begin Construction of Interconnected System

The offer of the Puget Sound Power & Light Company to furnish the cities of Tacoma and Seattle an inter-tie service for their light plants, for a consideration to be agreed upon, has been refused by both cities, and interchange of current will be accomplished over a line owned and operated jointly by the two municipalities.

The offer by the power company was made after both cities had awarded contracts for the work, and purchased materials and supplies. The power company's offer, made by President A. W. Leonard, was intended as a substitute for the proposed construction, Mr. Leonard advising the councilmen that his company now owned and operated four lines between the two cities, capable of accommodating any interchange of power desired. Mr. Leonard offered the city of Seattle the use of these lines at a saving of 25 per cent less than the cost of interest and maintenance charges on its proposed \$75,000 investment, the same offer being made to Tacoma.

J. D. Ross, superintendent of the Seattle light department, advised the council that the proposed line was a necessity, and urged that it not be abandoned. Under the inter-tie arrangement, the city of Seattle will be able to sell its surplus hydroelectric power to Tacoma in the winter months, and be able to purchase power from Tacoma during the summer.

Turlock Irrigation District Asks for Price on P. G. & E. Lines

The Turlock irrigation district has filed a petition with the California Railroad Commission asking the latter to fix just compensation for the electric distribution systems of the Pacific Gas & Electric Company and the Sierra & San Francisco Power Company in the district. The petition follows a resolution adopted by the district on the 21st ultimo to acquire these systems through eminent domain proceedings.

The district plans to acquire all real property of the companies in the district upon which are situated any electrical production, storage, transmission, and distribution equipment. The main transmission line to Patterson, Stanislaus county, is excepted. The Turlock district is engaged in developing its own electric power in conjunction with an extensive irrigation project.

The Great Western Power Company of California has recently moved its general offices from 14 Sansome Street to 530 Bush Street, San Francisco.

Events in Washington of Interest to Western Men

A Survey of Recent Developments in the Nation's Capital by
Paul Wooton, Special Correspondent of the Journal
of Electricity and Western Industry

Systematic and forward-looking surveys are being made in the intermountain region looking to the establishment of industries which can make profitable use of the water-power resources of that section. This is the observation of Major Howard S. Bennion, assistant chief engineer of the Federal Power Commission, who just has returned to Washington after an extended trip which included visits to a large number of existing and projected water-power projects. Major Bennion was surprised at the careful way in which the economics of the problem are being studied. Since the power throughout the entire intermountain section must be developed in large blocks to be profitable, large-scale industries must be built up to provide for consumption on the scale necessary to justify the very large expenditure which must go into the initial development.

These studies have not progressed far enough to admit of any definite announcements, but Major Bennion is convinced that there is a variety of industrial uses to which this power can be put. The water powers near the transcontinental railroad lines will not have to await the working out of these industrial plans, Major Bennion believes, because there are several sections of these lines where electrification even now is feasible. Just as the rapid increase in the load is surprising several of the western power companies, Major Bennion believes electrification of the western railroads will proceed at a more rapid rate than is generally supposed at this time.

There is a particularly difficult problem to solve, Major Bennion says, in the areas where large amounts of power must be made available for pumping enterprises. If the irrigation projects succeed, they must have cheap power. Before the power cost can be reduced to its minimum, uses must be found which will keep a part of the plants' capacities busy during the period of the year when pumping is not required. While he admits the difficulties of providing an off-season market for this power, he believes even that obstacle can be surmounted.

Major Bennion reports that the Utah Power Company is planning to proceed with its four projects on Bear River in the near future.

Western Highway Construction

In the construction of western highways very high standards of engineering are being followed. This is doubly true of bridge and culvert construction. These observations were made by Thomas H. MacDonald, chief of the Bureau of Public Roads, on his return to Washington after an extended trip through the West. During his inspection of western highway construction, Mr. MacDonald traveled nearly five thousand miles by motor.

Mr. MacDonald points out that the western states have unusual difficulties to overcome in carrying out their highway programs. Chief of these is the long distances that they have to cover.

Added to this is the scattered character of settlement and difficult construction. In spite of these difficulties, Mr. MacDonald declares that the highway problems have been attacked vigorously and effectively. He was impressed particularly with the high standard maintained in the construction of secondary roads.

There will be a paved roadway from Vancouver in British Columbia, southward to the Mexican border by 1925, Mr. MacDonald predicts. When this is accomplished he believes that great international highway, because of its excellence and because of its wonderful scenery, will attract motorists in large numbers from all parts of the country.

The limitation in the per-mile expenditure under the new highway law is very unpopular in the West, Mr. MacDonald found. This limitation came just at the time when practically every western state was planning wherever possible to make its long grades sufficiently gradual to permit of the ascent being made in high gear. By limiting the Federal participation, the best practice in the handling of difficult construction is discouraged.

National Hydraulic Laboratory

The establishment of a National Hydraulic Laboratory at which research work can be conducted continuously on flood control and other hydraulic problems is recommended by the Secretary of the Interior and by the Secretary of Commerce. Due to lack of funds and the great practical difficulties of keeping many American rivers within their banks, the scientific side of river hydraulics necessarily has been neglected because it has been found necessary to devote all available funds in the construction of works necessary to the meeting of the immediate need. It now is proposed to initiate research and scientific study of river training and the whole subject involved in river hydraulics.

The plan involves study of the peculiar flood problems presented on the Colorado, the Sacramento and the Columbia Rivers.

Chambers of Commerce Oppose Water and Power Act

The proposed \$500,000,000 California Water and Power Act has been opposed in resolutions passed recently by the boards of directors of the San Francisco and Los Angeles Chambers of Commerce.

The Los Angeles body opposed the measure on the ground that it is "inimical to the best interests of the state." The resolution further described the proposed act as "tending to create a political machine of tremendous magnitude."

Five reasons are set down by the directors of the San Francisco organization for opposing the measure. The resolution holds that the state should not go into business when there is no political or industrial necessity for it, referring to the excellent manner in which the existing hydroelectric utilities

operate under state regulation. It further contends that the state will lose a large revenue in taxes which are now paid by the utilities.

One of the chief contentions is that the development of the resources of the state will go forward at a much greater rate under private initiative, publicly regulated, than under state ownership and operation. The resolution further states that "such an experiment will serve notice to the world that California is hostile to private enterprise, preventing the investment of new capital and retarding development."

California Recognizes Broader Merchandising Channels

Further electrification of the home and the broadening of the channels of distribution were outlined as the tentative program to be carried out by the California Electrical Cooperative Campaign at the meeting of the Advisory Council of that organization held in San Francisco on August 25. Particular activity in pushing the convenience outlet and emphasis upon the adequate wiring of the home for ranges and heaters was suggested as the best method of increasing the scope of the merchandising field and of providing the proper outlet for the surplus power which will be made available through the extensive power development now under way in the state.

In presenting the solution of the contractor-dealer problem as the major work of the campaign for the year, Chairman Earl Fisher offered the following principles for discussion and adoption by the Advisory Council:

"No small division of the industry can expect to control or direct in any manner whatsoever the channels of distribution nor bear the burden of educating the public or the men within the industry. Likewise those benefiting from the educational work now being carried on, and to be carried on, must pay a just pro rata of the expense; in other words, the Campaign should build up a greater source of revenue by enlarging its list of contributors, with the distinct understanding that those contributing meet the Campaign's requirements as to policy and ethics. This will permit of the establishment of a broad constructive program which will recognize the legitimate distributors of electrical appliances, and will permit the financing of an educational program among all electrical contractors, which will be financed to a large extent by retail distributors of merchandise not now bearing their proportion of the expense."

This principle of recognizing a broader channel of distribution for electrical appliances was acted upon by the California State Association of Electrical Contractors and Dealers at their Santa Cruz convention, at which time they adopted resolutions calling the problem to the attention of the Co-operative Campaign and urging action of that body toward a solution of present difficulties. It was the consensus of opinion at that meeting that the trend of the times in the widening of merchandising channels could not be disregarded and that the new conditions should be frankly recognized by the electrical dealers.

Final action on the program thus outlined, which opens the way for the well-coming of retail establishments other than those purely electrical into the Co-operative Campaign, upon their acceptance of its principles, has been referred to the constituent bodies whose members are represented upon the Advisory Council.

California Contractor-Dealers Hold Convention

Meetings at Santa Cruz Bring Out New Ideas on Merchandising Small Motors. Earl Browne Re-elected President.

The California Association of Electrical Contractors and Dealers held one of the most successful meetings in its history at Santa Cruz, August 17-19. Earl Browne and J. W. Redpath, president and secretary respectively, were re-elected to office for the coming year.

In the session devoted to small motor sales, R. A. Balzari showed the profitable sales that are open to sell the youngster for radio shop and small uses around the home. M. W. Scanlon pointed to the helpful booklets that have been issued by various manufacturers showing the great number of uses to which fractional horsepower motors can be placed and the resultant sales that are possible. "Tie in small motor displays," said Mr. Scanlon, "with radio sets and the like."

F. T. Broilis told how his firm has developed quite a profitable business from sales of this nature, selling something like 100 motors in 60 days, and that the surprising thing about these customers was the fact that they were mature householders, largely seeking means of lightening the labor in the home.

C. R. Hunt inquired as to the fire hazard involved in fractional motor installations, to which Morris Hickson replied that nobody ever consults an inspector on such work.

Frank Boyd showed how a recent analysis of his to determine the present distribution channels of small motors, though formerly 33 1/3 per cent to industrials, 33 1/3 per cent to manufacturing plants and 33 1/3 per cent through the contractor-dealer channels, today showed only 20 per cent of the sales go to industrials and 20 per cent through the contractor-dealer. "The electrical manufacturer has in the past endeavored to back electrical stores," said Mr. Boyd, "but the contractor-dealer must look to his work if he is to expect this loyalty continued in the future."

Frank Thomas stated that much of the sales of small motors did not logically belong to the contractor-dealer channels in that large uses of motors

such as irrigation pump installations, need servicing that the contractor-dealer could not profitably supply. Furthermore, the hardware people found it profitable to take the 30 per cent margin allowed by the manufacturer and use these wares as leaders with a 10 per cent reduction to customers. "Washing machines," said Mr. Thomas, "properly belong in the department store."

G. E. Kimball, of the California Industrial Accident Commission, gave an interpretation of the new electric utilization orders that have been recently issued by the commission, which he followed by a practical demonstration of resuscitation rules that proves so realistic as to make many think his subject under treatment was a real emergency case.

The last evening, that of Saturday, was devoted to the annual banquet in the Casino of the Hotel Casa del Rey at which over 125 were present. Robert Sibley and Albert H. Elliot were the speakers of the evening.

Utah Power Company Extending Lines into Rural Districts

A new power line is being built into the Tintic district from Santaquin by the Utah Power & Light Company. This company now has a small line between Santaquin and East Tintic, but the present plans call for re-routing this line and enlarging it. The line which is being built will come through to Eureka by way of the Tintic Standard Mining Company's property. With the completion of this improvement the Utah Power & Light Company will have three heavy transmission lines into the Tintic district, thus insuring better electrical service for the mines, which are heavy users of electric power.

Supporting Tacoma in its fight of the last six years for the legal right to sell power outside the city limits, the state farm bureau will promulgate legislation at the next session of the state of Washington to permit municipalities this right.

Denver Cooperative League Holds Annual Picnic and Outing

The second annual outing and picnic of the Electrical Cooperative League of Denver was held at Lakeside Park, near that city, August 23. A half-holiday was declared by the electrical industry with the result that attendance passed the thousand mark and evidenced one of the most successful picnics ever given by a trades organization in the mountain region.

Races of all kinds and other novel events were featured on the afternoon program, according to E. C. Headrick, the league chairman. Prizes were awarded in all contests and a number of the picnickers are said to have gone home with sufficient electrical equipment to furnish their homes.

To interest those not competing in the various events, a drawing was held for twenty prizes, ranging from a vacuum cleaner to a flash light. The jobbers and the retail stores donated these prizes.

Clarence Keeler, production manager of the Denver Gas and Electric Light Co., headed the committee on arrangements and was assisted by H. W. Overbeck of the Mine and Smelter Supply Co. and Alex Hibbard, one of the prominent manufacturers' agents in Denver.

New Electric Club Is Organized in Tacoma, Wash.

At a recent get-together meeting of electrical men in Tacoma, comprising contractor-dealers, jobbers, manufacturers' representatives and executives of the Puget Sound Power & Light Company and the Tacoma Municipal Lighting & Power Department, the initial steps were taken looking toward the immediate formation of an electrical club, similar to those now functioning in Seattle and other western cities.

Prior to adjournment, the name Tacoma Electric Club was tentatively settled upon and Clarence Sather, of the Home Electric Company, Tacoma, was named temporary president. Twenty-five men of the industry in Tacoma have agreed to affiliate with the new organization.



Clyde Chamblin is just about to knock a home run in the annual ball game between the contractors and the jobbers



One method which the California contractor-dealers used in disporting themselves at the Santa Cruz convention

Meetings of Interest to Western Men

A. I. E. E. Holds Successful Pacific Coast Meeting

California's 220-Kilovolt Transmission Systems Furnish Chief

Topic of Discussion at Technical Sessions

With a program containing features which would do credit to the annual convention of the American Institute of Electrical Engineers, the Pacific Coast Convention was held at Vancouver, B.C., Aug. 8-11. Registration exceeded two hundred. Retiring President McClellan was present and presided at the convention which was conducted as a part of his administrative year.

In opening the convention, following Lieutenant-Governor Michels' address of welcome, President McClellan, taking his cue from the fact of meeting on Canadian soil, laid emphasis on the extended significance of the word, American, which is now recognized as applying not only to the United States but to the two great English-speaking sister democracies on the American continent.

O. B. Coldwell, vice-president for the Northwest, spoke of the unlimited opportunity and obligation of the electrical engineer in the Northwest which is "short on population and long on natural resources." With the opportunity for the use of electricity on the farm, in the industry and in the home, the electrical engineer in the West has more to do than anywhere in the country, he declared.

One of the principal features of the convention was the dinner Wednesday evening at which President McClellan made the principal address. Paying tribute to the spirit of the pioneer who broke trails to the Northwest and to the pioneer engineer who made transportation and communication possible to the same region, he pointed out that there is no longer any frontier, but that present problems are with more or less fixed things. The problems today are of internal organization which have replaced external force and this will largely be industrial organization. He pointed out that the problem is to conserve human resources in contradistinction to the past waste of natural resources; that we must organize for production and for enjoyment of life on the

American standard; that there must be developed aids to production which means multiplication of mechanical production; that the distribution of goods must be based upon a "transportation system" of highest economy.

All of this means that there must be power everywhere on tap; that the farm will depend upon electricity; that industry will be entirely electrified; and that there will be extensive electrification of railroads. He said that the nation is only entering an era of power. The electrical engineer of the West with his high voltage brings hydroelectric power to the back door and the electrical engineer of the East develops super steam stations with increasing economy.

"And what part will the engineer have in its development in its larger aspects." He pointed out that he will always have his technical part, of course, but that in addition he must rise with full right to be there to the plane of the lawyer and the economist in solving the broader problems. In other words, he must develop the professional spirit as well as his technical ability.

The convention adopted suitable resolution on the death of Alexander Graham Bell, and paid tribute to honorary secretary Ralph W. Pope, who did pioneer electrical work in British Columbia many years ago.

The local members provided many interesting entertainment features including scenic and inspection trips.

The technical questions which called forth the greatest discussions were high tension insulators and long distance transmission and the features of the forthcoming 220-kilovolt transmission schemes in California.

Colorado Commission Meeting Is Postponed to November 15

The scheduled meeting of the Colorado River Commission at Santa Fe, N. M., which has been twice postponed, will not be held until after the November election, according to word which

has been received by the various western members from C. C. Stetson, the executive secretary of the body.

The industrial situation has twice occasioned a postponement of the meeting owing to the necessity of Secretary of Commerce Hoover remaining in Washington. Until the crisis is past, it will be impossible for him to leave the capital.

It is hoped to hold the meeting on November 15, the tentative date agreed upon by the various members.

Electrical Week to be Celebrated by Seattle Electric Club

Seattle Electrical Week, promoted by the Seattle Electric Club, will be held the week of September 22-29, with two model electrical homes as the central features. The Mount Baker Park electrical home on Lakewood Drive, and the North Broadway model home at Allison Street, both under construction, will be equipped with electrical conveniences, and both will be dedicated with elaborate ceremonies on September 22. They will remain open for inspection from September 22 to October 9. The committee in charge of arrangements consists of Harry J. Byrne, chairman, L. R. Grant, Sam Hepler, Roy Worth, W. R. Rust, W. M. Meacham.

Denver to Hold Big Meeting For L. W. Davis and K. A. McIntyre

On the occasion of the visit of L. W. Davis of the National Association of Electrical Contractors and Dealers and K. A. McIntyre of the Society for Electrical Development, in Denver on September 26, it is the plan of the Electrical Cooperative League of that city to hold the largest and most enthusiastic get-together meeting of the electrical industry ever staged in that part of the country, according to a recent report of S. W. Bishop, the league manager.

Inasmuch as Davis and McIntyre will visit Pueblo and Colorado Springs on their way east from California, the meeting in Denver will be developed for the electrical interests in northern Colorado as well as the capital city, and it is already understood that a delegation from Cheyenne, Wyo., will be in attendance.

An additional feature will be the report of E. C. Headrick, the League chairman, who will attend the Association Island, N. Y., meeting, providing he has returned by that time.

Federal Engineer Inspects Utah Irrigation Projects

T. C. Adams, assistant drainage engineer of the United States Department of Agriculture, has just returned to Salt Lake City from a two weeks' inspection trip throughout southern Utah. He reports irrigation, drainage and reclamation projects generally in excellent condition in that section.

Mr. Adams conducted a general investigation of all the irrigation and drainage districts in southern Utah, and in nearly every section found remarkable instances of reclamation, landowners being generally well satisfied with drainage conditions. Especially large areas of arid land had been reclaimed this year.

COMING EVENTS

ROCKY MOUNTAIN DIVISION, N. E. L. A.

Annual Convention—Glenwood Springs, Colo.—September 11-13, 1922

COLORADO ELECTRIC LIGHT, POWER AND RAILWAY ASS'N

Annual Convention—Glenwood Springs, Colo.—September 11-13, 1922

NATIONAL ASSOCIATION OF RAILWAY AND UTILITY COMMISSIONERS

Annual Convention—Detroit, Mich.—September 26-30, 1922

INVESTMENT BANKERS ASSOCIATION OF AMERICA

Annual Convention—Del Monte—October 7-11, 1922

NATIONAL ASSOCIATION OF ELECTRICAL CONTRACTORS AND DEALERS

Annual Convention—Cincinnati, Ohio—October 9-14, 1922

G. P. Baldwin, Californian and western engineer, has been appointed general manager of the newly organized merchandise department of the General Electric Company. This department has been organized in recognition of the importance of the re-sale field, and the keynote of its efforts will be service,—



G. P. BALDWIN

to the ultimate consumer, to the dealer and to the distributor. Mr. Baldwin was graduated from Leland Stanford University in 1896 and immediately thereafter became associated with one of the large western street railroad companies, advancing to the position of road engineer. He then went with the Stanley Electric Manufacturing Company, being one of its Pacific Coast representatives. He came into the service of the General Electric Company and was made manager of the Pittsburg office about thirteen years ago. From there he was transferred to Philadelphia as district manager. During the war he was on the staff of General George W. Goethals at Washington. He has made an extensive study of the problem of distribution and marketing.

Clare N. Stannard, vice-president and general manager of the Denver Gas and Electric Light Company, is in New York, having been called there through the sudden death of Frank W. Frueauff, president of the company and a member of Henry L. Doherty and Company.

A. J. Moan, Pacific Coast representative of the Johns-Pratt Company of Hartford, Conn., has opened offices at 530 Call Bldg., San Francisco. The Johns-Pratt Company has recently separated its activities from the H. W. Johns-Manville Company and in the future will operate as a separate unit insofar as distributing activities are concerned. Mr. Moan will have charge of the Pacific Coast territory.

Cyril C. Loughery of the Pan-American Export Corporation in San Francisco, has been appointed San Francisco manager of the California Wire Company, which will open a warehouse at 633-635 Second St., San Francisco, and carry an extended store of California Wire products for distribution in northern California.

R. H. Manahan, city electrician of Los Angeles, recently left for Chicago to attend the National Convention of City Electricians.

Personals

Joel Cooper, one of the officers of the Mountain Electric Company with headquarters in Denver, is a visitor on the coast, having traveled overland by automobile.

Col. Edward H. Schulz, U. S. district engineer, Seattle, has been appointed division engineer of the North Pacific Division, with immediate supervision of all river, harbor and fortification work in the states of Washington, Oregon, Idaho and Montana. He succeeds Col. J. B. Cavanaugh, retired. The division engineer's office is now located in Portland, but the present appointment, it is claimed, will mean that the office will eventually be removed to Seattle. Col. Schulz is a West Point graduate. Before taking charge of the Seattle district, he was district engineer in charge of the Milwaukee territory. During the war he commanded the One Hundred and Ninth, and the Six Hundred and Fourth Engineers, and trained four railway engineering regiments for service in France. He was also in command of Camp Leach near Washington, D. C.

E. E. F. Creighton, consulting engineer of the General Electric Company, is a recent Pacific Coast visitor. It will be remembered that Mr. Creighton was formerly professor of electrical engineering at Stanford University. While in California, he spent some time on his large ranch in the northern part of the state before going to Vancouver to attend the Pacific Coast convention of the American Institute of Electrical Engineers.

J. P. Hickey, chief accountant of the Australian General Electric Company of Sydney, recently passed through San Francisco en route to the Schenectady plant of the parent company. This is Mr. Hickey's first visit to the Pacific Coast.

W. H. Witt, construction engineer, has opened offices at 204 Seaboard Building, Seattle, where he will engage in general practice. Mr. Witt was formerly associated with Henry Bittman, architect and engineer.

Arthur A. Brown, manager of syndicate operations of the Westinghouse Electric and Manufacturing Company with offices in New York, is on the Pacific Coast in the interest of his company. Mr. Brown's visit to the West was primarily to attend the Metal Mining Syndicate Meeting No. 9 which was held at Salt Lake July 20 to 24, but he will also visit San Diego, Del Monte, San Francisco, Seattle, Portland, Spokane and Butte before returning to New York.

F. G. Faccioli, high tension engineer and assistant manager of the Pittsfield works of the General Electric Company, and R. E. Doherty, assistant to Dr. Charles P. Steinmetz of the same company, attended the Pacific Coast convention of the American Institute of Electrical Engineers at Vancouver.

Max Rosenthal, one of the progressive contractor-dealers in Denver, is building a new home patterned closely after the electrical home recently exhibited in that city.

George E. Lewis, executive manager of the Rocky Mountain Committee on Public Utility Information, and E. P. Bacon, manager of the Natrona Power Company at Casper, Wyo., and president of the Rocky Mountain Division of the N. E. L. A., visited the principal central stations in Wyoming early in August in the interests of organization development and improved public relations.

F. T. M. Kissel of the electrical division of the Public Works Department, Wellington, New Zealand, is a recent San Francisco visitor. Mr. Kissel spent some time investigating all of the notable power plant constructions now under way in California.

Frank B. Tupper, vice-president of the Washington Coast Utilities Company, formerly located in the Boston offices of the corporation, has been transferred to Seattle following the closing of the Boston offices. He will have charge of a bond selling campaign which the company plans inaugurating shortly.

Frank T. Broilis, president and owner of the International Electric Company of Los Angeles, attended the state convention of the California State Association of Electrical Contractors and Dealers at Santa Cruz.

Chester C. Pratt, Utah plant superintendent of the Mountain States Telephone & Telegraph Company, was recently elected chairman of the Utah section of the American Institute of Electrical Engineers. Mr. Pratt, who was born in Salt Lake City in 1882, and received his education in the public schools of that city, has been associated with the Mountain States Telephone & Telegraph Company, and its predecessor, the Rocky Mountain Bell Telephone Company, for the past twenty-two years. He first entered the employ of the predecessor company as a collector in 1900, and through diligent effort and study has advanced to his present position. He is exceedingly well versed in



C. C. PRATT

all matters pertaining to the telephone business, and is in close touch with electrical affairs in general. He also takes a keen interest in Institute activities. Mr. Pratt represented the Utah chapter of the Institute at the Pacific Coast convention held at Vancouver, B. C., August 8 to 11.

T. J. Johnston, who has been with the Westinghouse Electric & Manufacturing Company at East Pittsburgh for the past twelve years, is now connected with the Los Angeles office as radio specialist, specializing on wired wireless and industrial application. Mr. Johnston was a civilian engineer, attached to the Chief of Staff, U. S. Signal Corps, a portion of the time during the war and later to the U. S. Signal Corps staff in France.

E. C. Headrick, chairman of the Denver Electrical Cooperative League, will represent that organization at the conference to be held at Association Island, N. Y., early in September.

H. Z. Osborne, Jr., chief engineer of the Board of Public Utilities of Los Angeles, has been appointed a member of the committee on chapter activities of the American Association of Engineers. Mr. Osborne is president of Los Angeles Chapter of the A.A.E.

Harry D. Randall, Rocky Mountain manager for the General Electric Company, has been elected chairman of the committee to develop outside territory for the Denver Electrical Cooperative League which is intended to include almost the entire state of Colorado.

E. L. Andrew, assistant manager of publicity for the Westinghouse Electric & Manufacturing Company, recently completed a tour of all western cities during which he conferred with district sales promotion representatives and spoke before various electrical organizations. Mr. Andrew was born in the East but came to Tacoma, Wash., while still in school. He is a graduate of the electrical engineering department of the University of Wisconsin, from which he entered the Westinghouse apprentice course. After being in charge of the publicity department of the Cincinnati office for a short while, he returned to East Pittsburgh to become head of the merchandising section of the publicity department. Within a year he was given supervision of the national advertising



E. L. ANDREW

of the company in popular magazines, newspapers and trade journals. During the war he served as a lieutenant in the Aviation Section of the Signal Corps. He has initiated two comprehensive programs of cooperation between the Westinghouse company and jobbers and dealers.

D. C. McClure, electrical superintendent of the Denver Gas and Electric Light Company, headed a party in the ascent of Long's Peak, one of the high-est in the Rockies, early in August.

E. H. Jones, factory representative of the California Wire Company, manufacturers of insulated wire and cables, with headquarters in Los Angeles, is a recent San Francisco visitor, where he has been establishing a San Francisco office for his company.

C. A. Luckenbach, vice-president in charge of public relations of the Los Angeles Gas and Electric Corporation, is visiting the northern part of the state. Mr. Luckenbach has been very active recently in the electrical industry's participation in California's Pageant of Progress and Industrial Trade Exposition as sponsored by the Los Angeles Chamber of Commerce which is to be held August 26 to September 9, inclusive.

Robert L. Eltringham, manager of the California Electrical Cooperative Campaign, has been in Los Angeles and southern California for the past two weeks, speaking to the various electrical firms and organizations on the proposed California Water and Power bill. Mr. Eltringham has spoken to some 6,000 electrical men and reports a favorable impression against this proposed act.

Franklin T. Griffith, president of the Portland Railway, Light and Power Corporation, has been reappointed chairman of the Water Power Development Committee of the National Electric Light Association for the coming year by President Frank W. Smith.

R. W. Murphy, Pacific Coast manager of the Westinghouse Lamp Company, with offices in San Francisco, is sojourning in the Northwest investigating the company's territory. His trip is being made in conjunction with the recent announcement that the supervision of all Pacific Coast territory, including the Northwest, is to be in the hands of the San Francisco office of the company in the future.

J. A. Garrett, industrial engineer, H. L. Adelquist, industrial engineer and accountant, and L. V. Hedrick, formerly comptroller and secretary of the Moore Shipbuilding Company, have opened offices in the Junior Orpheum Building, Los Angeles, for the practice of industrial engineering accounting, business counsel and management. The staff also includes Otis H. Castle, trust counsel, and George M. Thompson, federal tax consultant.

H. W. Dennis, construction engineer of the Southern California Edison Company, will be one of the speakers at the October convention of the American Society of Civil Engineers, to be held in San Francisco. Hydroelectric development will be the chief topic at this meeting and Mr. Dennis is eminently qualified to talk on this subject. He was the speaker at the last meeting of the Los Angeles Section of the society when he talked on the progress and magnitude of the Big Creek hydroelectric project of the Edison company.

A. E. Griswold, president and general manager of the A. G. Manufacturing Company of Seattle, is in Los Angeles for several weeks going over the territory with the local representative, Joseph Paulson.

Sidney W. Bishop, executive manager of the Denver Electrical Cooperative League, after a year as director of the affairs of that organization, has been charged with the duty of supervising its extension into those parts of Colorado and the Intermountain region which can be successfully served



S. W. BISHOP

through the electrical industry of that city. Mr. Bishop is a native of Denver and a graduate of the University of Colorado. Following his graduation he became allied with a Denver newspaper, later leaving this work to enter the beet sugar industry. At the beginning of the war he enlisted, was commissioned and when discharged held the rank of captain. He joined the Denver Electrical Cooperative Campaign immediately after its inception in July, 1921. This league has been one of the most successful cooperative movements yet inaugurated by the electrical industry in the West. Chief among its accomplishments was the display of an electrical home which was largely supervised by Mr. Bishop.

Obituary

Frank W. Frueauff, president of the Denver Gas and Electric Light Company, and first vice-president of the City Service Corporation embracing the Henry L. Doherty and Company interests, died in New York City on July 31. Mr. Frueauff was born in Pennsylvania in 1874, coming to Colorado when a boy. He was educated in the public schools of Leadville and Denver and began his career with the Denver Consolidated Electric Company, the predecessor of the present utility, at the age of 17 as a meter reader and lamp clerk. In 1899 he had risen to the position of secretary of the company and in five years became vice-president and general manager, which office he held until he became president in 1910. Mr. Frueauff was past president of the National Electric Light Association, past president of the National Commercial Gas Association and a member of the American Gas Institute, the Illuminating Engineering Society and the American Institute of Electrical Engineers.

The National Lamp Works of the General Electric Company has recently published a new home-lighting booklet entitled "Five Home-Lighting Recipes." The booklet tells in a very specific way just how to light the various rooms in the house. The booklet promises to be well received by the consumer, not only because it has been attractively and carefully put together, but also because it tells him in definite and specific language what he has previously been told in vague generalities.

The Pacific States Electric Company, western jobbers with offices in San Francisco, Oakland, Los Angeles, Portland, Seattle and Spokane, has been made western distributor for the radio apparatus manufactured by the Radio Corporation of America. The company has also been appointed distributors for the De Forest Radio Telephone and Telegraph Company and is now ready to make deliveries of De Forest equipment. The Pacific States radio department is prepared to assist dealers in all problems relative to the marketing of radio apparatus as well as to furnish them with expert radio engineering advice.

The Sherman Manufacturing Company, Battle Creek, Mich., after two years of development work, is now ready to market Sherman small motors. The machines which the company is marketing are of the continuous duty type, 1/8, 1/6 and 1/4 hp. in both a.c. and d.c. design. The motor has an operating temperature of 35 degrees C. or less. The company has issued Catalog No. 1 which will be sent upon request.

The P. A. Geier Company, Cleveland, has announced the results of the first week of its Royal cleaner midsummer sales contest and it is interesting to note that the Pacific Coast and particularly California, is in the lead. The winner of the first prize was Mrs. A. M. DuBois of Barker Bros., Los Angeles, who sold the equivalent of twenty-five cleaners in one week. The second high man for the first week was also from California and the third from Oregon.

The Ohio Electric and Controller Company, Cleveland, has recently issued Bulletin No. 203, describing and listing single-phase induction motors for circuits ranging from 110 to 550 volts, 25 to 60 cycles, and speeds from 1,150 to 3,500 r.p.m. The bulletin also describes a new line of d.c. motors ranging from 32 to 250 volts in capacities ranging from 1/8 to 1/3 hp. Two and three-phase motors are also made in the same sizes.

The Wonder Electric Company of Portland, has recently announced that it has received an order for 5,000 domestic waffle irons from a large eastern mail order house. The company was incorporated over a year ago by a group of local men. It has grown to such an extent that it will shortly move into a new concrete building at 487 North Twenty-ninth Street where it will have 5,000 sq. ft. of floor space. The company is headed by J. W. Henry, the inventor of the waffle iron which is its chief product.

The Red Lodge Electric Company of Red Lodge, Montana, has been organized for the purpose of manufacturing a new type of storage batteries. D. W. Columbus and Leslie Lyons are the organizers of the company.

Manufacturer, Dealer, and Jobber Activities

The Westinghouse Electric and Manufacturing Company, East Pittsburgh, has recently issued Leaflet No. 1134 describing in considerable detail electrical equipment for pumping oil wells. The equipment described has been developed especially to meet the peculiar conditions of oil well operation, for which steam is not very satisfactory. Some of the important advantages of electric pumping are: continuity of service, relatively low cost of electric power, absence of stand-by losses, the efficiency of an electric motor, close speed adjustment to give maximum production, greater speed at which cleaning and pulling can be done, and lower maintenance and attendance cost.

The Cutler-Hammer Manufacturing Company, Milwaukee, has developed two new types of compact electric tool and appliance switches. No. 7073 is of the momentary contact type for installation in the handle of such tools as drills. It is automatic in action, working like a trigger. Switch No. 7039 is for use on vacuum cleaners and similar appliances.

J. J. Farley of the Reid-Farley Electric Company of Fullerton, Cal., has recently announced that he has acquired the interests of Mr. Reid and will continue to operate under the old firm name. This company has been in business in Fullerton since 1917 and is one of the leading electrical contractor-dealer establishments in the Orange county district.

The Newbery Electric Corporation, Los Angeles, has just been given the exclusive rights for southern California for Colin B. Kennedy Company radio apparatus, according to an announcement made by Glenn Arbogast, president and manager of the company. The firm has just placed an order for 1,000 regenerative receiving sets which will be distributed to various southern California dealers. This is thought to be the largest single radio order yet placed by a firm in this part of the state.

The Electric Controller & Manufacturing Company, Cleveland, has recently placed on the market a new squirrel-cage induction motor which embodies a number of new ideas in design and construction. The stator frame of the new motor is cast around the stator windings. The frame is of the skeleton type. Fan blades for cooling are used on the 900-r.p.m. motors. The stator windings are impregnated twice. The bearings are extra large and provided with two oil rings. It is claimed that the motor is better not only from a mechanical standpoint but from the standpoint of efficiency, power-factor and torque.

The Spencer Electric Company, Oakland, Cal., has purchased the stock and fixtures of the California Electrical Construction Company in that city and has opened a new store at 320 Twelfth Street. The company carries a full line of fixtures and appliances and carries on an extensive repairing and contracting business. It has a particularly active radio department.

The Meese & Gottfried Company, San Francisco, manufacturers of machinery for elevating, conveying, screening and mechanical transmission of power, has announced the removal of its main office and engineering department from Mission and Annie Streets to its works at Nineteenth and Harrison Streets.

The Allis-Chalmers Manufacturing Company, Milwaukee, has recently issued bulletin No. 1122 covering steam turbine and generator units of the condensing and non-condensing type equipped with a pressure operated bypass valve. The bulletin is profusely illustrated and deals largely with the application of units of this type to sugar factories, refineries, sawmills, power and manufacturing plants.

The Ohio Electric & Controller Company, Cleveland, announces the appointment of Paul H. Diver as manager of sales. Mr. Diver has been associated with the company for the past four years as sales representative. The company also announces the appointment of C. J. Pagel as sales representative. Mr. Pagel was formerly with the Robbins & Myers Company in the Cleveland district.

The Roller-Smith Company, New York, has just issued Bulletin No. 560 covering a new type of enclosed circuit breaker. Numerous improvements are included in the design of the device.



WELL—WE STARTED SOMETHING!

When "Ye Editors" issued their challenge to the electrical industry relative to piscatorial prowess, they did not expect to dig up a hornet's nest so close to home. The above is what the advertising department, in the person of H. W. L. Gardiner, Pacific Coast advertising representative for the McGraw-Hill publications, offers as a quality catch. Harry says they are steelhead trout, caught by him in one of the branches of the Eel River. We do not know what Harry paid for the fish at some one of the numerous salmon canneries along the Northern California coast, but we will say that it cost him several cigars and a good deal of argument to get the picture in these columns. Harry SAYS he got a fine forked horn buck a day or two following his record catch.

Business Outlook in Western Market Centers

Reflecting the Trend of Community Thought on Conditions and Events Affecting Business and Industrial Activities Throughout the West

Compiled and edited for the Journal of Electricity and Western Industry by correspondents in all principal Western cities.

SAN FRANCISCO

Despite the retarding influences of strikes in the coal mining and rail industries of the nation, business activity in this district continued to increase during July, according to a report from the Twelfth District Federal Reserve Bank. Bank debits, retail sales and wholesale sales have increased appreciably.

As compared with a year ago, employment conditions are completely reversed. Shortages of laborers are not uncommon. Productive activity has generally continued at the high level set in June. The output of mines is greater and the production of petroleum has set a new high record. Stocks of crude oil and gasoline are the greatest in the history of the industry and two recent cuts have been made in price to curtail production.

Prices have fluctuated in various commodities, some rising and others dropping. The general wholesale price level increased 3.3 per cent during July.

Conditions in the electrical industry are better. There is a heavy demand for wiring supplies due to building activity. Utility extensions are requiring a large amount of material. Indications are that there will be a brisk trade in appliances during the fall.

PORTLAND

Heavy rains during the past two weeks broke one of the longest dry spells on record in the Northwest. The forest fire hazard has been completely eliminated and much valuable timber saved from destruction. Lumber production is again above normal. The production for the week ended August 12 was 8 per cent above normal and the production so far this year is 50 per cent in excess of that for last year. There is a much improved tone in export lumber business.

There seems to be no let-up to the building activity. No less than a dozen large apartment houses have been announced during the past month. Most of these will be completely equipped with electric ranges. All branches of the electrical industry in this section find conditions very good. The rail strike so far has caused little or no embarrassment to local jobbers as stocks were ample to carry them over until shipments could be received by water.

DENVER

Industrial conditions in Denver and throughout Colorado are steadily improving, excepting among striking railroad craftsmen and coal miners, according to the United States Department of Labor monthly survey just issued.

It reports the 1922 building program as breaking all previous records, causing lumber and building material industrial plants to operate with increased force and capacity output. Employment conditions generally have reversed from a surplus to a shortage, affecting many classes of labor, especially agricultural workers and building mechanics, according to the survey.

Building operations in Denver as evidenced by permits issued during the first 20 days of August are at the high mark, having passed the total July record in that time by several hundred thousand dollars.

In electrical lines, there is a marked demand for transmission and pole line materials. House wiring supplies are moving fast but on a narrow margin. Appliance sales are dull, however. Industrial equipment sales are increasing.

SALT LAKE CITY

The Intermountain Development Campaign, under the direction of C. E. Arney, Jr., director of the Pacific Northwest Products Committee of the Seattle Chamber of Commerce, is now well under way, and meeting with enthusiastic support from the people of the intermountain section. This is considered a very important move in the direction of stimulating business activity in this territory.

The mining industry of the intermountain states is gradually working its way out of the depths of depression into which it was plunged by dull markets and high production costs.

Building activity continues at a record-breaking pace. The demand for house-wiring, construction materials and various household appliances is keeping up as a consequence of this.

Recent reductions in freight rates between the intermountain states and the Pacific coast will undoubtedly result in an expansion of markets and the rapid development of industry in this section.

The effect of the railroad strike is being felt to some extent, in the slowing up of some industries, but it is confidently expected that this situation will be adjusted before any serious damage is done to business in this section.

SEATTLE

Exports of lumber from the Pacific Northwest for the first six months of the year established a new record, with 1,598,857,150 feet, more than double the exports for the first six months of 1921, and is proof of the "comeback" the lumber industry has staged since it began to revive less than a year ago. The Puget Sound ports led in the exports. Logging activities, practically suspended by the long dry period, have been resumed, following a "million-dollar" rain re-

cently. It is expected, however, that thirty to sixty days will elapse before the output can be brought back to normal as stocks have been seriously depleted.

Indicating a real revival of industry are the reports from the light departments of Tacoma and Seattle that a large number of new power contracts are being signed with industrial operators of small plants, an indication of returning optimism on the part of the small investor. In spite of the recent coal strike, and the serious outlook on the railroad strike, there is a definite feeling among business men in this section that with these two disturbing factors eliminated, the fall and winter of 1922 will show a splendid record in production and merchandising.

With the resumption of logging activities and renewed efforts at the lumber manufacturing plants, the employment problem in this district is practically eliminated. The demand for workers from the farming districts, public construction work and building projects has kept the number of unemployed at a minimum throughout the summer months.

LOS ANGELES

For the first fifteen days of August, there were 2,138 building permits issued in Los Angeles with an estimated valuation of \$5,838,817. The first fifteen days of August represent an increase of approximately 70 per cent over the corresponding period of 1921 and it is believed that the total for the month of August will run in excess of \$10,000,000.

Bank clearings for the first fifteen days of August amounted to \$206,156,629, which compares with the corresponding period of 1921 as an increase of approximately 25 per cent.

The sale of electrical appliances both in the smaller and larger appliances continues to increase and prospects are very favorable for a heavy fall business. The efforts of the June Bride Campaign seem to have borne fruit for it is reported by one of the local jobbers that their sales for the month of June doubled that of any previous June business, while others though not reporting materially increased sales, feel that the market that was opened up for the sale of electrical appliances for the dealers will materially increase fall buying from the jobbers.

The strike of the railway shopmen, while proving disastrous to some sections of the country, has not materially decreased the volume of business in southern California, however, an immediate settlement of the strike situation will materially benefit this section as large shipments are under way and undue delay may cause a slackening of building operations.

Construction News and Industrial Developments

Suggesting to the Engineer, Contractor, Manufacturer, Dealer, Agent and
All Business Men Opportunities for New Business

Bridges

Cal., San Pedro—Los Angeles Harbor Commission is considering plans for a concrete bridge and ramp on Harbor Blvd., between 15th and 16th streets, to cost about \$200,000. The main span over the railroad tracks will be 500 ft., while the ramp extending to 22nd St. will be 1400 ft. in length, with roadway 32 ft. wide. Foundation will be of driven creosote piles with concrete caps. Ornamental feature will consist of a double row of lamps from city hall to end of ramp at 22nd St.

Colo., Denver—Preliminary construction work on the new Sixteenth Street viaduct will proceed at an early date, with the payment by the railroads to the city of their share of the total cost of approximately \$420,000.

Ore., Portland—The county commissioners of Multnomah county are being urged to submit to the voters of the county at the November election a measure to issue bonds in the sum of \$1,600,000 for the construction of a new steel bridge across the Willamette river in South Portland.

Ore., The Dalles—Plans are being drawn by the state highway department for a bridge to replace Sherar's bridge over the Deschutes River, also for a new bridge across White River on The Dalles-California highway south of Tygh Valley.

Wash., Yakima—Contract for the new bridge across Naches River at Painted Rocks, to replace the Nelson Bridge, has been let to Union Bridge Company, Seattle, on a bid of \$46,194. Structure will be 252 ft. long, with a 20-ft. roadway and concrete abutments.

Buildings (Industrial)

Cal., Oakland—Plans are being completed by Architects Reed & Corlett, Oakland Bank of Savings Bldg., Oakland, for a three-story steel frame reinforced concrete factory building. It will be erected for the Hebern Electric Code, Inc., on the west side of Harrison Street from Eighth to Ninth Streets in Oakland. The estimated cost is \$200,000.

Cal., Long Beach—Glenn E. Thomas Co. will erect a \$40,000 brick building at 1029 American Avenue.

Cal., Los Angeles—Pozzo Construction Company, 421 Macy Street, has a contract to erect a Class C \$60,000, 1-story brick industrial building, near Amelia Street, extending from Ducommon to Commercial Street, for the Bank of Italy, as trustees. Albert C. Martin, Higgins Building, is the architect.

Cal., Los Angeles—Architects Walker & Eisen, 325 Pacific Finance Bldg., are preparing plans for central warehouses for Pomona district, at Monrovia Ave. and S. P. right-of-way, Pomona, for Southern Counties Gas Co. One building will be 100 x 30 ft., and the other 40 x 60 ft.; reinforced concrete or hollow tile construction, composition roofing, cement floors; reinforced concrete enclosing walls for the entire property; iron gates, yard, paving, etc. A 2-story brick building in the business district will be remodeled into general offices for the company.

Cal., Los Angeles—The Moran Company, 206 Kerckhoff Building, has completed plans and will erect a 1-story factory building, northwest corner of Stanford Ave. and Washington St., for Julius Reiman. Brick walls, 50 x 150 ft.,

steel columns and reinforced trusses, concrete foundation and floors, composition roof, steel sash, wire glass, steam heating system; \$20,000.

Cal., Bakersfield—Fred Bribble has been awarded contract for a warehouse building for the Associated Oil Company and the Associated Oilwell Supply Company at Chester Avenue and the Southern Pacific tracks. The building will cost \$80,000.

Colo., Denver—Detailed plans have been announced for the new Burlington shops to be erected on a 280-acre tract near 51st Avenue, west of Broadway. Estimated cost, \$2,500,000. The six main buildings to be erected at this time will include a large machine shop, blacksmith shop, boiler shop, an oil house, power plant, store house and office building. The improvements were all designed and developed by T. Krausch, engineer of buildings for the Burlington railroad, and construction will be under Mr. Krausch's supervision. Stearns-Roger Manufacturing Company of Denver are the contractors.

Nev., McGill—The Nevada Consolidated Copper Company is preparing to rush construction on the new milling plant replacing that destroyed by fire July 9, and it is the present intention of the management to be treating a considerable tonnage of ore before January 1. The loss to the Nevada Consolidated company was estimated at \$1,500,000, exclusive of the insurance.

Ore., Eugene—The Penn Lumber Company with a capitalization of \$50,000 has been organized for the purpose of rebuilding the Penn sawmill recently destroyed by fire. The plant, which will be rebuilt at once according to a statement of the directors, will have a capacity of 40,000 feet daily. The directors are W. J. Lichty, J. D. Harvey, L. A. Carson, W. W. Harvey and Thos. F. McGlynn.

Ore., Portland—Bids are being received for the construction of a modern factory for the Berghman shoe manufacturing company at 28th and Upshur streets. The building will cost about \$25,000.

Ore., Bend—Plans have been announced by the Concrete Pipe Company of Portland for the rebuilding of their Bend plant which was recently destroyed by fire.

Wash., Seattle—The first unit of the half-million dollar plant of the Washington Iron Works being erected by the Puget Sound Bridge and Dredging Company will be completed Jan. 1, according to recent announcement.

Buildings (Miscellaneous)

Ariz., Tombstone—School—J. M. Sparks, Douglas, Ariz., was low bidder at \$72,380 for constructing the new Tombstone Union High School building. The bid included plumbing and heating. All other bids were rejected, the low bid being held for further consideration.

Cal., Fresno—Hotel—R. F. Felchin & Company, Raphael Lake, associate, Bank of Italy Building, are completing working drawings for an eight-story and base, reinforced concrete hotel building to be erected at Van Ness and Kern Streets, for Sun Maid Hotel Corp. Cost, \$750,000. It will have 300 rooms with baths, all outside, stores, large lobby and dining room; washed air cooling system, hot water and oil-burning plant; 2 passenger and 2 freight elevators. The architects will take bids on all parts

of the work except concrete and carpentry, which they will handle themselves.

Cal., San Bernardino—Hotel—Architect H. E. Jones, 405 Katz Building, is preparing revised plans for a \$400,000 hotel to be built on E St. by local citizens and the Chamber of Commerce. The building will be of Italian Renaissance architecture built in shape of an "H" and have 5 stories, containing 150 rooms with baths and showers. Steel construction, cut stone finish, stone cornice, red tile room, terra cotta or marble first floor exterior. The revised plans provide four stores, 18 x 50 ft. each, on E St.

Cal., El Centro—Court House—The \$300,000 county court house bonds were sold by the supervisors to Security Bank of El Centro at a premium of \$3,000. Plans for the building have been completed by Architects Don Wells, El Centro, and Ralph Swearingen, Calexico. Classic design, two-story, with half basement. It is expected that the cost will be about \$280,000, leaving funds for furnishings. The plans were approved and architects ordered to proceed with working drawings.

Cal., Long Beach—City Hall—City council has ordered sale of \$350,000 4½% city bonds voted April 18. Of this sum, \$200,000 will be used for completion of city hall and \$150,000 for fire department improvements, including fire alarm system.

Cal., Fresno—Office—R. F. Felchin & Co., Bank of Italy Building, are preparing working drawings for a 10-story reinforced concrete office building on J Street, for San Joaquin Light & Power Corporation. Cost, \$600,000. Brick and terra cotta exterior, three elevators, steam heat, washed air cooling system, etc.

Cal., Bakersfield—Lodge Building—Construction will be started soon on the new Elks' building to be erected on the southeast corner of Seventeenth and Eye Streets, to cost \$310,000.

Cal., Bakersfield—Lodge Building—Excavation has been completed for the new Masonic Temple located on West Eighteenth Street, where a building to cost \$225,000 is planned.

Cal., Sacramento—Office—Bids for the construction of the first unit of the new state printing office to be located at the southwest corner of 11th and O Streets have been called for by the State Department of Public Works. Bids will be opened on Sept. 11. Construction work will be done on a day labor basis.

Cal., San Francisco—Apartments—Kincannon & Perego, owners, are planning the erection of a five-story apartment house to be erected on Leavenworth Street, north of Geary. Estimated cost, \$100,000.

Cal., San Francisco—Apartments—Crest View Investment Company, owners, have applied for a permit to erect an eight-story reinforced concrete building to be located on the northeast corner of Gough and Washington Streets. Estimated cost, \$490,000. Joseph L. Stewart is architect.

Cal., San Francisco—Apartments—Louis R. Lurie is planning the erection of an apartment house on the north side of Turk Street, adjoining the Fox Film Corporation Building, to cost \$100,000.

Cal., Colusa—School—An election will be held here on Sept. 12 to decide on the issuance of \$200,000 bonds for a new high school building. Plans and specifications have been drawn by W. H. Weeks, of San Francisco.

Cal., Bakersfield—Store—Currier & Dulgar have been awarded the contract for McMahan Brothers' furniture store at Eighteenth and T Streets, to cost \$80,000.

Cal., San Francisco—Apartments—L. D. Stoff has applied for a permit to erect a four-story and basement reinforced concrete apartment building on the south side of Sutter Street, west of Hyde. Estimated cost, \$90,000. E. H. Denke, architect.

Cal., Los Angeles—Apartments—Architects Aleck E. Curlett and Claud Beelman, 408 Union Bank Building, are preparing working plans for the class A apartment house to be erected at the southeast corner of Wilshire Boulevard and Berendo St., for A. C. Blumenthal, Loew's State Bldg. Ten stories, 145 x 175 ft., 240 rooms, reinforced concrete construction, pressed brick and terra cotta facing, marble and tile work, hardwood finish, elevators, steam heating, vacuum cleaning, wall beds; \$850,000. Macdonald & Kahn, Loew's State Theater Bldg., will be the general contractors.

Cal., Los Angeles—Store—Architect Chas. F. Plemmer, 1108 Story Bldg., has prepared preliminary plans for a 6-story, class A, department store building at Hollywood Blvd. and Vine St. for Dr. E. O. Palmer. The building is to be occupied by Broadway Bros. of Pasadena. Class A reinforced concrete construction, terra cotta facing, plate glass, elevators, etc.; \$400,000.

Cal., Los Angeles—College—The annex building at Southern Branch, University of California, on Vermont Ave. near Melrose Avenue, will be erected by day work, the bids received for the work having been rejected. Allison & Allison, 1405 Hibernian Bldg., architects. It will be a two-story, 77 x 50 ft., 40 showers in first story, lavatory and lecture rooms in second story; frame and brick veneer construction, tile roofing; \$25,000. Work will be done by construction force employed by the University.

Cal., Los Angeles—Hospital—Architect Robert H. Orr, 1301 Van Nuys Building, is commencing working plans for the new hospital building on Vermont Avenue near Sunset Blvd. for the Hollywood Hospital Ass'n. The preliminary plans, which have been approved, provide for a five-story, class A reinforced concrete building; main section, 192 x 40 ft. with a wing 60 x 40 ft.; training school, emergency hospital, dining room and culinary department in first story; executive offices, X-ray department, maternity department, operating rooms, and rooms for 150 beds in the upper stories; stucco exterior, clay tile and composition roofing, solariums, marble and tile work, steam heating, vacuum cleaning, refrigerating system, two elevators, etc. The building will cost \$300,000 and equipment will cost an additional \$100,000.

Cal., Los Angeles—Store—Architect Edwin Bergstrom, 1128 Citizens National Bank Building, is taking bids for erecting a 6-story, class A store and loft building on Broadway near Sixth St., for South Broadway Building Company. Bids are being taken for general contracting.

Cal., Ocean Park—Hotel—The Adolphus Busch property on the ocean front has been leased to a group of Salt Lake capitalists who are planning the construction of a four-story modern hotel building to cost \$1,000,000. Plans have been drawn by C. H. Russell, of Los Angeles.

Cal., Los Angeles—Schools—J. C. Austin, Frederick Ashley and George M. Lindsey, architects, have been commissioned to design a number of school buildings to be erected at Chino, as authorized by a recent bond issue of \$200,000.

Cal., Fresno—Store—The L. M. Barker Furniture Co., of Los Angeles, is planning the erection of a three-story and basement building on J Street, between Merced and Tuolumne, to cost \$100,000.

Cal., Chico—School—Polk & Evans have been awarded contract for the building of the Shasta

Union Grammar School on their bid of \$34,400.

Cal., Los Angeles—Film Accessory Plant—Announcement has recently been made by Sol Lesser and his associates that a plant, estimated to cost \$1,000,000, will be established here for the manufacture and distribution of picture accessories to film agencies and others.

Cal., Arbuckle—School—Hernden & Finnegan, of Sacramento, have been awarded general contract for building the Arbuckle union grammar school on a bid of \$60,040.

Cal., San Francisco—Stores—Wm. H. Woodfield, Jr., has applied for a permit to build two one-story and basement reinforced concrete store buildings on the west side of Mason Street, north of Eddy. Estimated cost, \$30,000.

Cal., Monrovia—Hotel—William H. Culver, theater owner residing in Monrovia, and Melvin DuMond, local artist, are back of a movement to build an unusual type of hotel on the summit of Gold Hill, back of Monrovia, and overlooking the San Gabriel Valley. The structure will be modeled on cliff dwelling remains and will be true to type, including ladders for approach. It is expected that over \$100,000 will be expended on this project. The designs will be prepared by Mr. DuMond.

Cal., South Pasadena—Bank—Architects John Parkinson and Donald B. Parkinson, 420 Title Insurance Bldg., are preparing plans for a two-story brick building at South Pasadena for Security Trust & Savings Bank. Banking room and stores in first story, offices and apartments in second story; 60 x 100 ft., terra cotta and pressed brick facing, plate glass windows, steel beams, composition roofing, pine trim, oak and pine floors, tiled baths, water heaters, gas radiators, wall beds, bank fixtures, marble and tile work.

Cal., Santa Ana—Store—Wm. Rohrbacker, Santa Ana, was low bidder at \$89,970 for erecting a 3-story and basement class C store and loft building at Santa Ana for Fine Bros. W. W. Kays, Santa Ana, architect. It will be 76 x 119 ft., pressed brick facing, plate glass, steel beams and columns, composition roofing, skylights, 2 elevators, etc.

Cal., Los Angeles—Banks—Escherich Bros., 234 W. 37th Place, have been awarded a contract at about \$100,000 for erecting two bank buildings for Security Trust & Savings Bank; one building at 6th St. and Oxford Blvd., and the other at Santa Barbara and Vermont Aves. L. A. Building & Contracting Company, Marsh-Strong Building, was awarded a contract at about \$70,000 for erecting the building at Pico and Alvarado Sts. John Parkinson and Donald B. Parkinson, 420 Title Insurance Bldg., architects. The Sixth and Oxford building will be 2-story, 65 x 110 ft., Vermont and Santa Barbara building will be 2-story, 60 x 110 ft., and the Alvarado building will be 2-story, 164 x 185 ft.; stores and banking rooms in first stories, offices and apartments in second stories; brick construction, pressed brick and terra cotta facing, plate glass, steel beams, copper sash, composition roofing, pine trim, hardwood, pine and cement floors, wall beds, tiled baths, gas radiators, water heaters, marble and tile work, bank fixtures, reinforced concrete vaults.

Cal., Pasadena, Additions—Wm. C. Crowell, 440 Chamber of Commerce Building, Pasadena, has the contract for erecting a high voltage research laboratory and a library addition to the Physics Building at Throop Institute, Pasadena. Library addition, 2-story, 53 x 80 ft., concrete construction, tile partitions, wall furring, concrete slab and composition roof, one concrete floor, one tile floor; high voltage laboratory, 1-story, 68 x 129 ft., 57 ft. high; steel frame, roof trusses and balconies, concrete walls, foundation and floor, concrete slab and composition roof, plaster exterior, art stone, decorated panels. Bertram G. Goodhue, New York, architect.

Cal., San Diego—Store—Macdonald & Kahn,

603 Loew's State Theatre Bldg., Los Angeles, have the contract at \$100,000 to erect a reinforced concrete store building at 951-55 Fifth St., for F. W. Woolworth Company. Building will be three-story, of reinforced concrete construction. Whiting-Mead Commercial Company has cleared the site, and work will start at once.

Cal., Fullerton—City Hall—City trustees will call for bids soon on the \$140,000 city hall which is to be erected at Spadra Road and Whiting Ave. It will be two-story and basement, with brick walls, stucco and terra cotta trim. The dimensions will be 100 x 80 ft. Architects, John C. Austin and Horace W. Austin, Associate architect.

Cal., Porterville—Lodge—Architect Ernest J. Kump, Rowell Bldg., Fresno, is completing plans and will be ready for figures next week for a two-story structural steel and brick lodge building, to be erected in Porterville for the local B.P.O.E. Estimated cost, \$75,000.

Cal., Santa Barbara—Lodge—A building committee has been named by the local B.P.O.E. Alfred Edwards has been selected as chairman. The members will proceed at once to secure plans for the new building, and will plan financial details. A site at the corner of Figueroa and Anacapa streets was recently purchased. Among the members of committees are Homer N. Duffy, Dr. J. R. Poore, C. G. Dodge, E. P. Dunn and James B. Ricard.

Cal., Pomona—Theater—Milwaukee Building Company, Los Angeles, has the contract and will start work at once on a \$200,000 theater to be erected on West Third Street, between Thomas and Main Streets, for West Coast Theaters Company. The building is being put up by local men. F. C. Froehde, city engineer, is surveying the site.

Cal., Los Angeles—Hotel—Architect Edwin Bergstrom, 1128 Citizens National Bank Building, has completed plans and is taking bids for a 4-story and basement class C hotel building at Sixth and Boylston streets for the Salvation Army. L-shaped, 150 x 162 ft., 167 rooms, brick construction, pressed brick facing, composition roofing, pine trimming, lavatory in each room, baths, two elevators, steam heating; \$200,000. Bids are being taken separately on general contracting, plumbing, steam heating, elevators and electric wiring.

Cal., Whittier—Bank—Macdonald & Driver, Douglas Building, Los Angeles, have been awarded the general contract at about \$92,000 for erecting a new class A bank and office building at Whittier for the First National Bank of that city. Baker Iron Works has the contract for structural steel and Gladding-McBean & Co. have the terra cotta contract. John Parkinson and Donald B. Parkinson, 420 Title Insurance Bldg., architects.

Cal., Los Angeles—Printing Building—Architect C. F. Skilling, 430 Bradbury Building, is preparing plans for a brick printing building on Flower Street between 3rd and 4th Sts., for Fred C. Lange. One-story, 43 x 100 ft., rug-brick front, art stone trim, hardwood and concrete floors, asbestos slate roof, metal skylights, steel sash, wire glass, steel columns; \$18,000.

Cal., Los Angeles—Bank and Office—The Security Trust and Savings Bank has taken a lease on the ground and several lower floors of a 12-story steel frame building, 60 x 180 ft., to be built on Spring Street adjoining the Security National Bank. Aleck E. Curlett and Claud Beelman, Union Bank Building, will be the architects. Macdonald & Kahn will be general contractors. Property is owned and building will be erected by San Francisco syndicate. Present lease will not expire until a year from next October.

Cal., Monrovia—Business Building—Architect Frank O. Eager, American National Bank Bldg., is preparing plans for a 2-story brick business building, 53 x 124 ft., to be erected at the corner

of Palm and Myrtle Sts., to be known as Baker-Menge Block. Brick walls, buff. brick and enam. brick trim facing, Terrazzo marble floor in drug store, freight elevator, etc. Work will start soon.

Cal., Eagle Rock City—Bank—Architects John Parkinson and Donald B. Parkinson, 420 Title Insurance Bldg., are preparing plans for a 2-story brick bank building at Eagle Rock for Security Trust & Savings Bank. Banking room and stores in first story and offices and apartments in the second story; 60 x 100 ft., terra cotta and pressed brick facing, plate glass, steel beams, comp. roofing, metal skylights, pine trim, oak and pine floors, tiled baths, water heaters, gas radiators, bank fixtures, marble and tile.

Cal., Huntington Beach—Auditorium—Architects Walker and Eisen, 325 Pacific Finance Bldg., are completing plans for a municipal auditorium to be erected at Huntington Beach. Italian renaissance style, brick construction, 100 x 58 ft., plaster exterior, cast stone trim, clay tile roofing, pine trim, maple floors, open timber ceiling, lavatories; \$25,000.

Cal., Huntington Beach—City Hall—Architects Walker & Eisen are completing plans for a City Hall building, to be erected at Huntington Beach. It will provide accommodations for all city officials; two-story main building and two wings, 75 x 126 ft. extreme dimensions, brick construction, plaster exterior, cast stone trim, clay and comp. roof, pine trim, oak and pine floors; \$60,000.

Cal., San Marino—Municipal Building—Bavin & Burch Co. of Los Angeles was awarded contract at \$40,042 for erecting main building and east wing of municipal building..

Cal., El Centro—Courthouse—Plans for the new Imperial county court house, concrete construction throughout, have been completed by architects Don Wells of El Centro and Ralph Swearingen of Calexico. The cost will be defrayed from the \$300,000 bond issue recently voted for this purpose.

Cal., San Pedro—Library—A total of \$80,000 is now available for a library building and the library board will select a site at once. The harbor commission has appropriated \$30,000 and the library board, \$50,000 of recent bond issue.

Cal., Burlingame—Dairy Plant—Plans are being prepared by Wm. H. Toepke, architect, 942 Market Street, San Francisco, for a one-story reinforced concrete dairy plant building to be erected on the southeast corner of San Mateo Drive and Howard Avenue for the Dairy Delivery Company. The cost is estimated at \$20,000.

Cal., Clarksburg—School—A bond issue of \$75,000 for a new school building carried at a recent election by more than six to one. It is planned to erect a concrete or hollow tile building of six rooms, auditorium and all modern facilities.

Cal., San Francisco—Apartments—L. and E. Emanuel, Inc., are the contractors and C. A. Menusdorffer is architect, for a seven-story and basement class B reinforced concrete apartment to be erected on the northwest corner of Washington and Gough Streets. Cost, \$39,860.

Colo., Denver—Shops—The Moffat road has begun the rebuilding of the part of the shops recently destroyed by fire. A new carpenter shop and mill, 35 x 112 ft. in size, and a new oil house are being constructed at a cost of approximately \$25,000. The buildings will be of structural and corrugated iron construction and are to be fireproof.

Idaho, Montpelier—Business Block—A modern business block is to be erected immediately on the corner of Main and Eighth streets. The new building will be erected by Edward C. and Joseph C. Rich, and will cost approximately \$45,000.

Ore., Portland—Apartments—F. Manson White, architect, is preparing plans for an eight-story, fireproof apartment house, to cost \$350,000, to be built at the southwest corner of Lownsdale and Alder Streets. M. Pallay is the owner of the property. The structure, which will cover 100 by 120 ft., will contain ninety-eight apartments.

Ore., Portland—Apartments—Two new apartment houses to cost \$120,000 have been announced. One will be built at 684 Lovejoy St. and the other at Fifth and Hall Sts. Plans are being prepared by Claussen & Claussen.

Ore., Portland—Apartments—R. F. Wassell and associates announce that a modern apartment house to cost around \$200,000 will be erected at East 14th Street and Hawthorne Ave., immediately.

Ore., Portland—Apartments—A modern apartment house costing \$100,000 will be erected at Thirteenth and Market Streets, according to announcement of the Ulrich Investment Company.

Ore., Portland—Apartments—Application to build a 100-room apartment house to cost \$100,000, at East 25th Street and Hawthorne Ave., has been filed with the city building department by Jason Moore.

Ore., Salem—Dormitory—A new dormitory costing \$50,000 will be built at the Chemawa Indian school at Salem, according to announcement.

Ore., Portland—Lodge—Two new lodge buildings to cost over \$100,000 are to be erected, according to announcement. The Washington Masonic lodge building to be built at East Eighth and Burnside Streets will cost \$75,000, and the A. Azar Pyramid temple of the same organization to be erected at Third and Columbia Sts. will represent an investment of \$40,000.

Ore., Portland—Institution—Construction work on the new Oregon employment institution for the blind in Portland will probably begin in the next three or four months, according to the state board of control. In all, four buildings are to be erected on the property at East Glisan street between East Eighty-third and Eighty-fifth streets, costing \$136,000. The buildings will all be of fireproof construction. Plans are now being prepared by Houghtaling & Dougan and will be completed in 60 days. There will be a two-story administration building, a men's dormitory with 60 sleeping rooms, a shop and another building to include a laundry and heating plant.

Ore., Portland—Apartments—A three-story apartment house, to cost approximately \$100,000, will be erected at the northwest corner of Hawthorne Avenue and East Fiftieth Street by Jason Moore. Plans are being prepared by Edward A. Miller and include latest design and modern equipment.

Ore., Portland—Offices—Frank J. Cobbs and Charles T. Mitchell of the Cobbs & Mitchell company, extensive lumber producers in Oregon, have purchased the 100 by 100 ft. of ground at the southwest intersection of West Park and Taylor streets, at a cost of \$45,000, for an office building. Preliminary construction plans have been prepared, but it has not yet been determined whether the new building will be erected this year or next.

Ore., Portland—Apartments—Claussen & Claussen, architects in the Macleay building, are preparing plans for a 17-apartment building for O. Hendricson, to be erected at 664 Lovejoy street, between 20th and 21st streets. This building is to be built of concrete, to be 50 x 100, three stories and basement. The cost will be about \$65,000.

Ore., Portland—Apartments—Plans have been prepared for an apartment house for the Peters Construction Company, by Claussen & Claussen, architects, Portland. The building is to be erected on Vista Avenue and Laurell Street, to be 50 x 85 ft. in size, and to cost \$35,000.

Ore., Pendleton—Church—The Freewater Federated Church has completed plans for a new church to be erected on the Tanke property situated at the north end of Depot Street. The building will be 72 x 52 ft., colonial style, and will cost about \$25,000.

Ore., Portland—Lodge Building—Plans for the new lodge building of Palestine Masonic lodge, No. 141, have been completed by Orlo R. W. Hossack, architect. The building is to be constructed on property recently acquired at the southeast corner of Sixty-fourth Street and Forty-fifth Avenue Southeast, and will cost approximately \$35,000 when completed.

Ore., Portland—Offices—Roberts Brothers through Thomas Roberts announces that the firm will erect a class A building for office use at the southeast corner of West Park and Morrison Streets. The cost has not yet been determined.

Ore., Portland—Apartments—Permit has been applied for by the Peters Construction Company to erect a two-story brick apartment house on the northwest corner of Tenth and College Streets.

Utah, Ogden—Gymnasium—Contracts for the construction of the Weber gymnasium, which will be built at a cost of \$300,000, have been awarded to the following Ogden firms: Concrete work, E. J. Isakson; brick work, George H. Greenwell & Son; carpenter work, R. W. Treseder & Son; galvanized iron work, Newman & Stuart; plastering, H. A. Shupe; heating and plumbing, T. E. Thomas.

Wash., Seattle—Hotel—Alterations and improvements to the Arlington Hotel, to be made immediately, will cost approximately \$100,000. Harlan Thomas, architect, Arcade Building, will supervise the work.

Wash., Seattle—Clubhouse—The B.P.O.E. plans additions to its present 7-story building that will provide a hotel structure of 300 rooms and will cost \$1,000,000. Lodge owns the site, and new structure will provide a building 10 stories high, covering a half block. Auditorium seating 3,000 will be a feature of the new building.

Wash., Everett—School—The East Stanwood and Edmonds school districts have sold bond issues totaling \$53,000 which will be used in construction of new schools in the two districts named.

Wash., Olympia—Bank—The contract for the new \$200,000 bank building to be erected for the Capital National Bank, here, has been awarded to the Rounds-Clist Company of Seattle. Structure will be two stories high, 60 x 120 ft. in size.

Wash., Pt. Angeles—schools—Chris Kuppler & Sons, here, on a bid of \$67,000, received the contract for erection of three schools in Port Angeles.

Wash., Dayton—School—Contract for construction of the proposed \$125,000 high school here has been let to J. J. Lorenz, Spokane, on a bid of \$82,289 for the general contract alone.

Wash., Seattle—Apartment—Edward Nelson, here, has been awarded general contract for the proposed Ambassador Apartments to cost \$100,000. Structure will be 60 x 120 ft., four stories high.

Dams

Cal., San Diego—City council has adopted an ordinance appropriating, subject to auditor's approval, \$18,000 for installing flush gates in spillways of Lower Otak and Barrett dams. The two sets of gates will increase the capacity of the reservoirs 5,000,000,000 gal.

Cal., Newtown—The Coast Construction Company, which was recently awarded a contract by the El Dorado Water Company to construct a dam in Webber Creek here, is starting operations.

Idaho, St. Anthony—The North Fork Reservoir Company has let the contract for a dam at the outlet of Henry's Lake to B. M. Tanner, of Idaho Falls. The dam, including rights-of-way, will cost approximately \$125,000. Dan G. Martin, of Idaho Falls, is engineer of the project which is to supplement the supply of water for eight canal companies on the North Fork near St. Anthony.

Mont., Kalispell—The Interior bill recently passed by Congress carried an appropriation of \$200,000 for the Flathead project. The largest construction job in the project is the Hubbard dam, 100 ft. high and 400 ft. long. During 1922 about \$100,000 will be spent on this dam and the work will be completed in 1923.

Ore., Bend—Shipment of construction supplies to Bend is being started from Portland by A. J. Welton of the United Contracting Company following the acceptance of his bid of \$31,811.70 by the Deschutes county municipal improvement district for the construction of the storage reservoir dam at Crescent Lake, which will develop surplus flow to be drawn out of the Deschutes to supplement the supply of water now carried by the feed canal of the old Tumalo project.

Ore., Lakeview—The Goose Valley Irrigation Company is constructing a dam and reservoir 12 miles northwest of Lakeview on Cottonwood creek to store the waters from the Cottonwood watershed. The dam will be 610 ft. long and 40 ft. high and will furnish water for irrigating the lands in the north Goose Lake valley. The new work will entail an expense of more than \$100,000 and will be finished in time to store this season's water.

Wash., Everett—The city will purchase a site of 21 acres near Everett, on which will be erected a three-unit reservoir. The proposed new storage dam will have a capacity of 20,000,000 gal., double that of the present reservoir.

Highways

Cal., Sacramento—Contracts have recently been awarded by the California Highway Commission for the following: Los Angeles County—A total of 10.43 miles of highway, between Quail Lake and northerly boundary, for 3.37 miles of 15-ft. by 4-in. reinforced concrete second story, 2½-ft. by 8-in. shoulders, 6.86 miles of 15-ft. by 2½-in. to 3-in. asphalt concrete surface, 2½-ft. by 8-in. shoulders, and .20 miles of 2-ft. by 8-in. shoulders, was awarded to the Southwest Paving Company, Los Angeles, on a bid of \$173,047.50; engineer's estimate, \$234,613.75; plus materials furnished by the state, \$75,595.90, making total cost \$248,643.40. Mendocino county—Contract for grading a section of highway, between Hopland and El Robles, 9.89 miles in length, was awarded to Murdock Bros., Oakland and Ukiah, California, on a bid of \$62,283.75; engineer's estimate, \$66,325.20; plus materials furnished by the state, \$1,398.00; making total cost \$63,681.75. Inyo county—Contract for grading 11.66 miles of highway, between Fish Springs School and S.E. Cor. Sec. 33, T. 8 S., R. 33 W., M.D.B. & M., was awarded to Redmond, Page & Pond, Alameda, California, on a bid of \$67,333.50; engineer's estimate, \$64,036.00; plus materials furnished by the state, \$4,832.70; making total cost \$72,166.20. Riverside county—Contract for 2.02 miles highway, through the City of Banning, 16-ft. by 5-in. concrete base, 7-in. alt. edges, was awarded to Fred W. Teschke, Los Angeles, California, at \$25,052.25; engineer's estimate, \$30,166.50; plus materials furnished by state, \$15,042.35; making total cost \$40,094.60.

Cal., Sacramento—The State Department of Public Works was authorized by the Railroad Commission to construct an overhead crossing over the tracks of the San Francisco-Sacramento

Railroad Company near Denverton, Solano county. The crossing is estimated to cost \$26,000, and the order provides that three-fourths of the cost shall be borne by applicant and one-fourth by the railroad. The crossing is for a new piece of highway and as the traffic is relatively light it was held by the Commission that it would not be fair to divide the cost equally between the state and the railroad.

Idaho, Boise—Contracts for the construction of three highway projects let as follows: Three and one-fourth miles of the Sawtooth park highway, to Gleim & Shafer of Boise, their bid being \$52,477.49. This is known as federal aid project No. 56. Surfacing eight miles of the Grace-Preston highway, south of Niter, to Poacatello Construction Company, whose bid was \$10,982.20. Federal aid project No. 61, calling for grading all structures and surfacing 13.7 miles of the Yellowstone park highway from Blackfoot north to the Bonneville county line, has been let by the state to Fred Coolidge, whose estimate was \$46,654.91.

Ore., Salem—At the next meeting of the state highway commission to be held in Portland soon, bids will be considered for the construction of 65 miles of highway and five bridges. The estimated cost of the work is placed at \$500,000.

Ore., Portland—The Umatilla county court has awarded a contract for building four miles of rock grade on the new Pine creek road from Weston to Reed and Hawley Mountain to the Johnson Construction Company, at approximately \$49,000.

Utah, Salt Lake City—The state road commission has signed a contract with Adams, Johnson & Gillispie for the construction of the west section of the Delta-Holden highway at a cost of \$56,326.

Utah, Delta—Contract for the construction of the Delta-Holden road project in Millard county, a distance of 10.58 miles, has been awarded by the state road commission to Adams, Johnson & Gillispie of Salt Lake City, their bid being \$107,649.58.

Wash., Walla Walla—Johnson Construction Company of Portland, on a bid of \$48,000, received a contract for four miles of the Weston-Elgin Mountain road.

Wash., Port Townsend—Bids will be called for immediately for reconstruction of one mile of the Olympic Highway at Brinnon on Hoods Canal. Work will include the construction of a concrete bridge and will cost \$70,000.

Wash., Wenatchee—The Chelan County Commissioners have awarded the contract for grading and surfacing with crushed rock 6.35 miles of the Sunset Highway, to Burke, Sengfelder & Berry of Wenatchee, on this firm's bid of \$49,300.31.

Wash., Kelso—The state highway department of Washington will receive bids early in September for placing of sand and gravel for use in paving the Pacific Highway between Kalama and Toledo, a distance of 35 miles. The state highway board plans to award the contract for paving this entire stretch next year in seven contracts of five miles each. The sum of \$1,400,000 will be provided for this work.

Wash., Vancouver—The district engineer's office has announced that a new road 11 miles long will be built between Underwood and Lyle in Klickitat county by the state as part of the North Bank highway. Contract is to be let in October.

Irrigation Projects

Cal., Sacramento—The date of the proposed bond election among property owners in the several counties of Northern California affected by Sutter-Butte by-pass assessment No. 6 has again been changed and under the present plans of the State Reclamation Board will not be held until September 23. The assessment is for more

than \$8,000,000. The changes in the election date have been made necessary in order to allow the board time to complete the election formalities under the law.

Mont., Helena—The Whitehall irrigation district proposes a bond issue of \$284,000 with which to buy and add to the dam and construct 25 miles of canal.

Ore., Portland—Utilization of the Deschutes river in Oregon for the irrigation of approximately 140,000 acres and incidental power development has been recommended to the federal power commission by a board of engineers composed of D. C. Henney, consulting engineer of the Reclamation Service; Colonel J. B. Cavanaugh, Army Engineer Corps, and F. F. Henshaw, district engineer, United States Geological Survey. According to the report, 550,000 hp. can be developed on the river in addition to the use of some of the waters for irrigation.

Utah, Salt Lake City—Salt Lake and Provo business men have just made an inspection of the land on the west side of Utah lake, announcing their intention of installing an electrically-operated pumping plant some distance north of Mosida. The plant will irrigate 12,000 to 20,000 acres of land, using canals of the old Mosida project. It is reported that the proposition will be financed by one of the large life insurance companies.

Wash., Prosser—Approval by the superior court of Prosser of the \$28,000,000 bond issue for the Horse Heaven irrigation project, opens the way for commencement of construction work. Work will begin within 60 days, according to Howard S. Amon, local contractor, who will have general charge of construction. Water will be carried from the east slopes of Mt. Adams, a distance of 112 miles, to the Horse Heaven country lying between the Columbia and Yakima rivers.

Power Plant Equipment

B. C., Rossland—The West Kootenay Light and Power Company has floated a \$25,000 bond issue to cover the cost of additions to its power plant, made necessary by the contract recently entered into to supply the Consolidated Mining and Smelting Company with power for its mine and concentrating plant at Kimberley.

Cal., Inglewood—The Southern California Edison Company will build a substation having a capacity of 7,000 hp. at the corner of Los Angeles and Fir streets. Total cost, \$60,000.

Cal., Los Angeles—Compton Water & Lighting Company has been authorized by the Railroad Commission to issue and sell at not less than par, \$19,400 capital stock for additions and betterments.

Power Projects

Cal., Weed—The Weed Lumber Company is expecting to generate all its own power on completion of a new power plant, near its sawmill, upon which work has started.

Cal., Turlock—All bids for labor for the Don Pedro power line were rejected by the directors of the Turlock irrigation district. The board decided to construct the transmission line by day labor and will place the engineer in charge.

Cal., Stayton—C. E. Taylor has purchased a power site on the old Jim Davie donation land claim between Stayton and Aumsville, where a power station will be immediately constructed. Mr. Taylor has already secured the franchise for furnishing the town of Sublimity with light and power.

Idaho, St. Anthony—The Utah Power and Light Company is surveying for a new power line from the Menan station to St. Anthony. The old 44,000-volt line will be abandoned as soon as the new one is completed. The new line

will be 44,000-volt, from Menan to Lorenzo, and then following the highway to St. Anthony, and will be completed this fall.

Idaho, Emmett—Work, according to report, has been started on the \$1,200,000 government diversion dam and power plant on Black Canyon. A line will be run from the Emmett substation to the dam site to operate the machinery and a spur will be built from the Idaho Northern Railroad for transporting materials.

Ore., Newberg—The Yamhill Electric Company has just completed an 11,000-volt line from Dayton to Amity, a distance of 13 miles, which will supply Amity, Sheridan and Willamina with electric service. The cost of the new line was approximately \$50,000. Service to these towns will probably be rendered by a subsidiary corporation to be known as the Sheridan Light & Power Company.

Ore., Roseburg—A bill appropriating \$30,000 for the construction of a power plant for lighting the caves in southern Oregon, is now before Congress, according to P. H. Dater, district engineer in charge of roads and water power of the federal forest service. The plan is to develop power on a nearby stream.

Wash., Seattle—City officials of both Tacoma and Seattle have decided to proceed with the construction of the new \$150,000 intercity power tie line. Most of the material contracts have been awarded.

Wash., Spokane—Actual construction of the new Palouse high tension power line of the Washington Water Power Company, from Lind to Colfax and Pullman, has been started. The new 60,000-volt line will complete a circuit of the company's power lines through the Palouse district, insuring power from either end of the loop in emergency.

Wash., Skamania—A revocable permit has been granted the Skamania Electric Light & Power Company by the county commissioners to build and maintain an electric line along the Columbia River Highway from the eastern boundary of Multnomah county to Ellahurst, the line to be maintained under the supervision of the county commissioners.

Wash., Centralia—The North Coast Power Company has petitioned the Lewis county commissioners for three franchises to operate power lines over county roads. Two of the proposed extensions are adjacent to Chehalis, and the third is on Waunch's prairie.

Wash., Spokane—With a view to serving electric power to the Quincy, Winchester, Rock Island and Trinidad irrigation districts in Grant county, engineers for the Washington Water Power Company will immediately begin an investigation of possibilities of installation of power. Eugene Logan, civil engineer of the company, will conduct the survey.

Wash., Seattle—Appropriation of an additional \$500,000 from the proceeds of the bond sales for work on the Skagit hydroelectric project is authorized in an emergency ordinance introduced in the city council.

Wash., Chehalis—Further extension of electric service in this section is planned by the North Coast Power Company, which plans two extensions into the Newaukum valley district, south and southeast of Chehalis; also one into the Waunch Prairie section, north of Centralia.

Railroads

Idaho, Pocatello—The Oregon Short Line is planning on expending \$1,600,000 on improvement work in Idaho and authorization has been received to begin work at once. Of this amount approximately \$75,000 is to be expended in improving and enlarging the Pocatello and Nampa shops. Additional trackage also is to be installed at Salt Lake, McCammon and Soda

Springs, and a double track laid at Glenns Ferry.

Ore., Portland—The Southern Pacific Railway has acquired real estate along East First street in this city amounting in value to \$1,500,000 and plans to spend ultimately about \$6,500,000 in elevating its main line, double tracking and re-routing its tracks in the East Side business district, according to announcement by officials of the company.

Wash., Everett—Construction work, estimated to cost \$2,000,000, is being planned on the Cascade division of the Great Northern Railroad, according to recent announcement by C. McDonough, division superintendent.

Street Lighting Systems

Cal., Folsom—The Pacific Gas and Electric Company is rebuilding its electric street lighting system here.

Cal., Los Angeles—H. H. Walker, 1800 West 12th St., was awarded contract by the Board of Public Works, August 11, at \$9,415 for ornamental lighting system on Buckingham Road between 16th and Washington Streets.

Cal., Lompoc—Plans and specifications have been adopted by the city trustees for a concrete post lighting system. Work involves 42 posts, complete. Bids will be called for soon.

Cal., Los Angeles—City council has adopted (August 9) an ordinance ordering installation of lighting posts and appliances on Melrose Ave., between Western Avenue and Gramercy Place; also St. Andrews Place between Marathon Street and 125 ft. north, and on portions of Marathon Street, Manhattan Place, Gramercy Place; 1911 Imp. Act. Plans and specifications on file at office of city electrician, second floor, South, City Hall Annex.

Wash., Chehalis—Contract for installing the standard light system on Market and other business streets of the city has been awarded to the Astoria Electric Company, on a bid of approximately \$10,000. City will furnish the material at a cost of \$8,777.

Streets and Sewers

Cal., Yuba City—Galbraith & Janes were the successful bidders for paving Bridge Street from Plumas to Cooper Ave., Cooper Ave. from B Street to the Colusa Road, Linden and Hawthorne Streets and sections lying north of Forest Ave. on Orange, Olive, Chestnut and Walnut Streets.

Cal., Los Angeles—Hoffine-Middleton, subdividers of Western Avenue Park, have announced that the paving of Western Avenue from Slau-son to Manchester will be under way in September.

Cal., Yuba City—Bonds amounting to \$50,000 have been voted in this city for the installation of a sanitary sewer system.

Cal., Marysville—Contract for paving streets in districts 15 and 16 has been awarded to the Warren Construction Company.

Utah, Ogden—The city commission will advertise for new bids for the laying of several miles of water mains in the southeastern portion of the city, according to W. S. Craven, city engineer, the bids already received being unsatisfactory.

Wash., Tacoma—A resolution adopted by the city council recently provides for the construction of a trunk sewer, providing both sanitary and storm sewer laterals in the South Tacoma district, at a cost of \$950,000. A hearing is set for September 11.

Wash., Seattle—Contract for the grading, paving, etc., of Empire Way has been let to J. L. Smith, Pioneer Building, on his bid of \$351,298.

Wash., Seattle—Contract for water mains on Lucile Street has been let to Paduano & Company, on a bid of \$50,819.

Water Works

Cal., Napa—Bonds amounting to \$650,000 were recently voted in Napa, \$240,000 of which are to be used for purchasing the present water system of the Napa City Water Co. The remainder of the bond proceeds will be used in the improvement and extension of the system and the development of the Milliken Canyon holdings.

Cal., San Bernardino—County engineer's plans for a domestic water system at the General Hospital and Detention Home include a 150,000-gal. reservoir and 2,500-ft. pipe line estimated to cost \$10,000. The reservoir will be built on Perris Hill and will be 50 ft. diameter, 10½ ft. deep. Bids will be called for within a few weeks.

Utah, Clearfield—The town of Clearfield has been incorporated by the property-owners living in the territory adjacent to Clearfield, in order to obtain a domestic water supply and establish a system of waterworks. The proposed water supply will be brought from the mountains east of the town, and will be shared by the farmers residing between the town and the mountains.

Utah, Salt Lake City—Albert Coulson, of Nephi, Utah, has filed application with the state engineer for the use of ten second-feet of water from Salt creek, with which he proposes to develop horsepower to operate a mountain spring salt works. The water will be used under a head of 24 ft. and will develop an estimated 26 hp.

Wash., Sedro Woolley—The Skagit Improvement Company, which furnishes water to Sedro Woolley and Burlington, has started work on two big storage reservoirs, each to hold 15,000,000 gal.

Wash., Camas—The city has retained Stevens & Koon, consulting engineers of Portland, to make an appraisal of the existing waterworks and to prepare plans and supervise construction of such improvements as may be required.

Wash., Tacoma—The city council has passed ordinances authorizing the expenditure of \$51,500 for repairs to the city water system, which includes repairs to the McMillin reservoir, and replacing of 1,145 ft. of wooden water mains.

Wash., Spokane—The city water commission is planning to spend about \$140,000 in improvements to the city water plant. The work will include the replacement of several miles of wood pipe with steel or cast iron pipe and the construction of a concrete reservoir.

Wash., Morton—At a recent special election, voters passed a bond issue of \$16,000 for the installation of a gravity water system. The Auburn Construction Company will install the system.

Miscellaneous

B. C., Vancouver—Pier—The Vancouver Harbor Commissioners have filed application at the city hall for a permit for the construction of a pier, to be known as the Ballantyne pier, and to be constructed at the foot of Heathley Street. The pier will cost approximately five million and the purchase of the land in connection with it one million dollars. The pier will be built by the Northern Construction Company.

Cal., Los Angeles—Harbor Improvements—Harbor Commission has filed with engineer of war department, application for permission to make the following improvements: To widen wharf No. 1, pier Nos. 233 and 242, on east side of the east channel in Los Angeles outer harbor, the proposed addition to be 2,481 ft. long by 22 ft. wide. To widen the existing 330-ft. wharf extending southeast from U. S. pierhead station 430, channelward a distance of 15 ft., and to continue the construction of the new wharf along the same line to a point near U. S. pierhead station 434. To improve an area 70 ft. by about 215 ft. in the southwest corner of Fish Harbor, for the extension of boat ways and wharf near berth No. 258.

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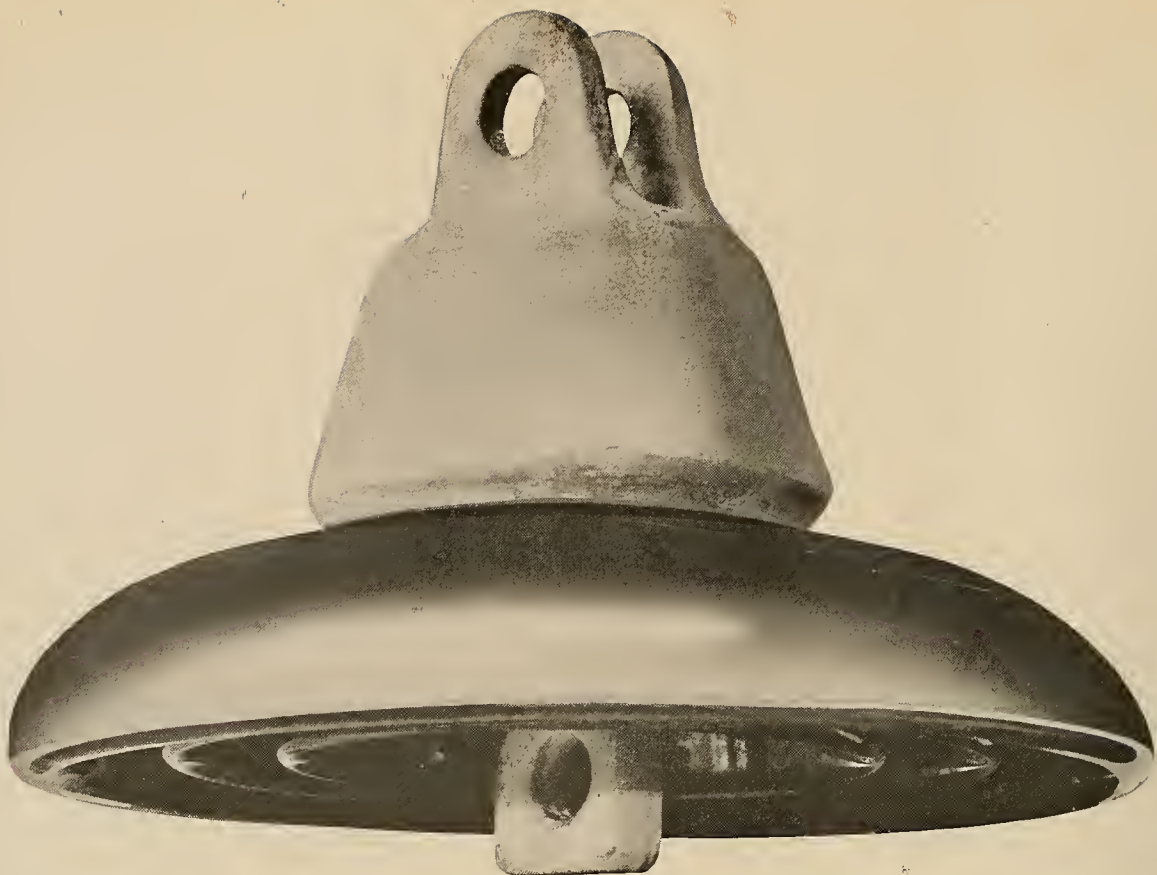
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The New Ambassador Apartments, a nine-story building in Portland, Ore., containing 49 five-room apartments of the most modern type. The Portland Railway Light & Power Co. installed in each home an 18-70 Crawford Electric Range.

An excellent example of Domestic Load

FRANKLIN T. GRIFFITH, president of the Portland Railway Light and Power Company, made the statement in late 1921 that "the outlook for the electrical industry in Portland and vicinity is encouraging. The use of electrical energy is steadily increasing. The most marked increase in consumption during the past year and in immediate prospect, has been and will be in further development of the use of energy in the homes of the people."

When he made that statement he had in mind just such use of energy in the home as the installation of 49

new Crawford Electric Ranges in this splendid new Portland apartment building. For that installation translated itself at once into a sharp upward trend and a steady new plateau in the domestic load curve.

This installation would not have been made with Crawford Electric Ranges unless experienced commercial men and electrical experts had been convinced, by severe test and tangible demonstration that "The Crawford Made Electric Cooking Perfect."

The Crawford Electric Range will supply a tonic to your domestic load curve.

The Crawford Plan gives every central station executive a chance to combine his energy with our own to further the use of electricity in the homes of the people. It's a plan to sell the best range in the best way. Have you seen it?

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Pacific Coast Representative: Burton Y. Gibson, 680 Folsom St., San Francisco

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Price—or Adequate Service?

PROGRESS in the electrical industry waits on the application of more fundamental knowledge to the merchandising of appliances. The consensus of opinion among men who have studied conditions is that the electrical merchandising business is suffering from undernourishment while in its infancy. In fact, many of the subsequent ailments can be traced directly to this condition.

PIONEERING in the matter of informing the public in the uses and economies of certain electric devices has largely been undertaken by power companies. Load-building was the sole aim and little thought was given to future merchandising possibilities. Appliances were offered on a price basis, and the result has been that proper consideration has never been given by the manufacturer to the margin which should be allowed between the dealers' cost and the cost to the consumer.

NO merchandising effort can be successful unless the spread between producer and consumer is sufficient to cover the costs of an adequate organization of distribution, plus a reasonable profit to the essential agencies of distribution. These costs are of necessity higher in the electrical business than in many others. There is a high sales resistance. No class of merchandise requires more intelligent or high priced sales effort; few, if any, require more servicing; and to secure volume of business, deferred payments with con-

sequent collecting and financing are unavoidable.

THE development of a large number of prosperous, aggressive dealers will not become universal until the business is demonstrated to be sufficiently profitable to attract the highest type of merchandising brains. It must first be determined just what it does cost to sell electrical appliances and apparatus. Also, study could well be made of the experience of other industries, such as the phonograph industry, which has been successful in a big way. Much could be gained by a comparison of the costs, spreads, and retail selling prices.

SOME manufacturers have realized the need and are establishing their prices with a spread calculated to give better results. Jobbers have made much progress in cost accounting methods through their national association, but retailers in general display an amazing lack of knowledge of their costs of doing business. The problem is one which should command for its solution the concerted efforts of all branches of the industry. There must be coordination and a more general recognition of the necessity of a sufficient spread that proper service may be rendered.

UNTIL the facts are known, nothing can be accomplished. We have confidence in the ability of the men of the electrical industry to establish speedily policies based on sound economic principles, when the need is apparent.

Development of Automatic and Remote Controlled Generating Stations

AUTOMATIC and remote controlled hydroelectric generating stations are a development in the science of electrical engineering which is destined to prove increasingly important. From a technical viewpoint, there is no limit to the capacity of generating stations for which automatic control equipment can be adapted. However, in a large station the cost of operation becomes a small part of the total cost of energy, and complicated switching systems often require high-class operators.

Automatic equipment may be used in medium sized plants, as large as 12,000 kva., especially when feeding into a large system. Operation is simplified and apparatus is protected to such an extent that one watchman of little technical ability is required for general duties around the plant. But the greatest field is that of the small plants auxiliary to a larger system, for in such plants no operators need be stationed. A periodic inspection is the only attendance required.

In many places throughout the West there are small, undeveloped water-power sites which are capable of developing power with a comparatively small capital investment in the plant. Elimination of the cost of operating attendance would make the cost of kilowatt-hour output very attractive.

Control schemes are, in general, of two classes: First, the remotely controlled station, in which the generator leads run to the main station, where the generator is synchronized by hand; second, the entirely automatic station, where the generator is automatically synchronized into the transmission network.

An article elsewhere in this issue describes a successful station of each type, operating in California. Engineers will no doubt adopt these types of stations for the development of small sites hitherto thought uneconomical.

Death Knell of Socialistic Amendment Is Sounded

IF the recent primary election in California can be taken as a criterion of the attitude of the voters of that state on governmental extravagance, the fate of the much discussed Water and Power Act seems certain. The biggest political upset in the history of the state occurred when a candidate running on a platform of curtailment of expenses and economy defeated the incumbent governor by a substantial majority.

Propositions in the form of constitutional amendments to increase the bonded indebtedness and the tax rate will be suspiciously viewed by the average voter in California in November's election. Governmental extravagance and tax reduction are prominent and practically the every-day conversation of the man on the street.

With the unanimous condemnation of the press, with public disapproval expressed by chambers of commerce, commercial organizations, city councils

and officials and others, public interest is generally aroused in the Water and Power Act. Since the average voter is inclined to vote "NO" on any proposition that he does not understand, and since even a casual perusal of the text of the amendment reveals its iniquitous provisions, it would seem that California will probably be spared the inevitable catastrophe of its passage.

Placing House Numbers on Curb Is Found Successful

SOMETHING entirely new in the way of a location for the house number has just been introduced in the West. It consists in placing the number on the side of the curbing in front of the home. This plan is of particular benefit to the person who is trying to find some particular dwelling while riding in an automobile or other vehicle, and would be worth thousands of dollars a year to merchants whose employes are called upon to make deliveries during both night and day.

Heretofore house numbers have been placed at any point that suits the personal desires of the home owner. The number of one house may be above the porch, of another on the porch railing, and of still another on one of the posts of the porch or beside the door. There has been no attempt at uniform numbering of homes. It has been done in a haphazard manner so that anyone desiring to locate the number of any particular dwelling has little idea where it may be found. If the curb home number was universally used, it would be a simple matter to locate any home at any hour.

These 6-inch numbers are stenciled on the curb with lamp-black and oil and when once placed there will last for years. Prior to the stenciling operation the curbing is cleaned perfectly with a stiff steel brush. It costs just 25 cents to have the complete number stenciled on the curb.

Attorney-General Daugherty's Declaration of American Principles

LIKE Frankenstein, the student of physiology in the romance of that name, who created a monster which committed atrocious crimes and inflicted terrible retribution upon its creator, the labor and trade unions of the country face the prospect of being destroyed by their own creations. Governmental mills as well as those of the Gods grind slowly. After what seems to many to be interminable delay Attorney-General Daugherty, in requesting a Federal injunction to protect the rail systems of the country from unlawful interference, has announced that the government of the United States is supreme.

"The underlying principle involved . . . in this action," Attorney-General Daugherty said in concluding his plea for the Federal injunction, "is the survival and supremacy of the government of the United States." His plea for the injunction, Mr. Daugherty said, was made necessary by the fact "that there comes a time in the history of all nations

when the people must be advised whether they have a government or not.

"No union or combination of unions can, under our law, dictate to the American Union," the statement continued. "When the unions claim the right to dictate to the government and to dominate the American people and deprive the . . . people of the necessities of life, then the government will destroy the unions, for the government of the United States is supreme and must endure.

"So long, and to the extent that I can speak for the government of the United States, I will use the power of the government within my control to prevent the labor unions of the country from destroying the open shop.

"When a man in this country is not permitted to engage in lawful toil, whether he belongs to a union or not, the death knell to liberty will be sounded and anarchy will supersede organized government."

No doubt this announcement came as a distinct shock to some unionists. But if the Attorney-General means what he says the back of misguided union labor domination has been broken.

Experiments Indicate Improvements in Impulse Wheel Design

FOR many years no radical changes have been made in the design of impulse wheels. Great improvements have been made in details, in governors and in auxiliary apparatus, but so far as general principles and fundamentals are concerned, one might conclude that this type of prime mover had reached its ultimate state. Such conclusions as to finality, however, are never safe. Elsewhere in this issue appears a news note describing a new departure in the design of impulse wheels. Despite the recent trend of higher and higher heads on reaction wheels and the development of higher specific speeds for impulse wheels, there is still a field ranging between heads of 800 and 1,000 ft. to which neither impulse nor reaction type is exactly suited. That is, at these heads both types have certain disadvantages or limitations. In the attempt to apply the impulse wheel to the larger units toward which modern practice is tending, certain obstacles have not heretofore been overcome. The restriction of specific speed, more particularly, imposes on the large impulse unit a low velocity with the consequent heavier machinery and increased size of power house structure. On the other hand, the Pelton wheel has distinct advantages over the reaction type when the water contains sand or other impurities in considerable quantity, or when the unit is called upon to operate part of the time under partial load. In other words, the Pelton wheel has such advantages in resisting hydraulic wear and corrosion and maintaining efficiency under varying loads that there is incentive to adapt this type to all heads. Considerable advance has been made in reaction wheel design in decreasing leakage through the clearance spaces around the runner and in prolonging the life of the seals, but the impulse turbine does not have to meet the problem of leakage at all and hence no amount of improvement can put

the reaction wheel on an equal footing with the impulse type so far as this feature of design is concerned. A closer approach to the ideal type of unit than anything yet available would be a runner having the hydraulic advantages of the impulse wheel and at the same time developing the specific speeds approaching those obtainable with the reaction wheel. If and when the experiments referred to in the news note lead, as the early results indicate, to the production of units in commercial sizes that fit these requirements, the whole field of hydraulic prime movers will be affected in a most beneficial way.

A Convention That Means Much to the West

ONE of the outstanding conventions of the year, from the western viewpoint, is the eleventh annual meeting of the Investment Bankers' Association of America, which is to be held at Del Monte October 9-12. In point of numbers it will not rank high—perhaps not reaching the 1,000-mark,—but in the caliber and influence of its personnel California will not have played host to a more important group during 1922.

For many months western men in the investment securities field have been carefully laying their plans, not only to stage a thoroughly successful convention, but to present the eastern bankers with the opportunity to study on the ground, the physical aspects of major developments with which their guests have been intimately familiar—as far as study of engineering reports, appraisals, and bond house analyses and circulars can make them. Now they are to see with their own eyes what has been achieved by the crystallizing of their clients' investment capital into large units for the financing of hydroelectric plants, irrigation works, highways, and public buildings.

To those of us who are interested particularly in the development of the hydroelectric resources of the West, it is gratifying to note that one of the important side-trips is to be over a hydroelectric project typical of the best development of the industry. The first-hand knowledge and keener perspective that will be obtained by these men who play a very real part in making possible these big construction undertakings cannot help but be reflected in a widened interest in the marketing of this class of securities.

RADIO BULLETINS

The Journal of Electricity and Western Industry broadcasts a special industrial and business news report each Monday night at 7:30 o'clock from San Francisco. This report is broadcasted from station KLP, operated by the Colin B. Kennedy Company at Los Altos, California, on a wave length of 360 meters.

Western Comment on Current Events

Editorial Notes and Readers' Views on the Outstanding Aspects of Financing, Trade Promotion, Legislative and Associated Topics that have a Special Bearing on Western Business

Few if any of the political issues which various western states have faced during the past half century have aroused the interest and apprehension of the nation as has the proposed

California Water and Power Act Meets Opposition

California water and power constitutional amendment. It is interesting to note that the measure is receiving almost universal condemnation from chambers of commerce, civic and commercial organizations, public officials and others.

One of the most recent and most powerful California institutions to voice its disapproval of the act is the California Development Association, representing the agricultural and industrial interests of the state. Commenting upon the resolution passed by the board of directors, Charles W. Helser, president of the body, says:

"In undertaking the most careful consideration of so highly a controversial matter as the proposed water and power act, which comes before the electorate of California for its approval or rejection at the forthcoming election, the California Development Association feels most profoundly its responsibility and accountability to the citizenship and the general welfare of the great state of California.

"A policy of timidity and selfish desire to avoid criticisms by highly and politically interested partisans would certainly have dictated that the association refuse to undertake a decision on the merits of the act.

"The contemplated act provides for such sweeping changes in the control and development of water and power service in the state as to unquestionably affect, in a determining way, the future destiny of the state, as basically controlled by these two major elements in its assets of present and future prosperity.

"The association has met the situation squarely. It has passed a resolution setting forth its opposition to this measure. It intends to use the strength of its entire organization to defeat the measure."

Attacking the priority law set down by the United States Supreme Court in its recent decision in the Laramie River case on the grounds that it "violates principles of equality" between

Colorado Seeks Relief From Court Ruling

the states, the state of Colorado, the Greeley Poudre Irrigation District, and the Laramie Reservoirs and Irrigation Company

have filed a petition for a rehearing of the case. The Laramie decision recently attracted wide attention throughout the West as establishing a precedent to control the distribution of water of interstate streams for irrigation, power and other purposes.

In the suit as it first came before the court, Wyoming contended that waters from an interstate stream cannot rightfully be diverted from one watershed to another which entirely removes them from entering a state formerly enjoying their benefit. It also contended that prior appropriations made at

downstream points should not be deprived of waters to which they had established a right and for the use of which they had made considerable investment. Colorado, on the other hand, claimed that it is the right of any state to dispose as it may choose of any or all of the waters flowing in the portion of an interstate stream within her borders, "regardless of the prejudice it may work" to other states below, and, secondly, that states on an interstate stream have a right to the equitable division of the waters and that she had not received her share.

The court upheld Wyoming, at the same time definitely setting up beyond the power of any appeal, the recognition of prior appropriation of water among states which recognize this doctrine.

In the brief asking for a rehearing, Colorado claims that she is entitled to more than one-eighth of the water supply of the river, as the decision implies, because she is furnishing one-half of the water in the stream. The brief also contends that the water should be distributed by "equitable apportionment" and not upon the basis of priority of appropriation.

"Equitable division" is declared to be "entirely feasible" and "in choosing a rule to govern distribution between states," it adds, "it would seem that one should be chosen which will permit the development of every state and not allow one state to be enriched at the expense of another."

What action the Supreme Court will take in the appeal for a rehearing will not be determined until the meeting of that body in October. However, the result of the appeal will be awaited with particular interest as any new decision will vitally affect the development of any western water rights in the future, whether for irrigation or power purposes.

Electric logging as practised by western lumber companies seems to be highly successful, according to reports from the operators at the various mills.

The latest application of electrical equipment to the lumbering industry is on the property of the Hutchinson Lumber Company in Butte county, California.

Following a complete survey of the logging camps of that organization, General Manager Baker has declared that not only has the electrical equipment simplified the work but that the flexibility of electric power is saving much time in the handling of logs. He points out that in the past when steam was used for moving the logs, there was a considerable loss of time while sufficient power to handle large logs

was being generated. With the electric donkey, the power is always immediately available.

The experience of this California company in using electricity in its logging operations bears out that of lumber operators in the Pacific Northwest, where already there are several electrically equipped mills and camps. That the successful application of electricity to lumbering operations is but another triumph for the electrical engineer is evident from the almost universal praise that is being manifested by the mill owners who have adopted this type of motive power.

Further assurance that the West will soon have its own primary iron and steel industry is contained in the recent announcement of the incorporation of the

Steel Industry For West Seems Assured Pacific Steel Corporation under the laws of Delaware. The headquarters of the company will be located in San Francisco. The new corporation, completely financed by a group of San Francisco, Los Angeles, Seattle and Salt Lake City bankers, will be a combination and enlargement of present steel manufacturing plants on the Pacific Coast.

This is the second merger of steel, iron and coal interests on the Pacific Coast. Utah and California interests, headed by Wigginton E. Creed, president of the Pacific Gas and Electric Company, recently perfected the organization of the Columbia Steel Corporation. Preparations for the manufacture of pig iron in Utah by this company and its shipment to the Pacific Coast for manufacture into steel and for fabrication are now under way. Work on the construction of a railroad to the iron ore and coal fields has started.

The Pacific Steel Corporation is said to include the Pacific Coast Steel Company, which has a large mill in San Francisco, the Southern California Iron and Steel Company of Los Angeles and San Diego, and the Milner Corporation of Utah.

Present plans, according to T. T. C. Gregory, attorney for the company, call for the erection of blast furnaces costing approximately seven and a half million dollars in Utah, where the iron ore and coal deposits are located. The company has been incorporated for \$40,000,000.

A conference which promises to have a great deal of bearing on the future commerce of the Pacific will be held in Honolulu October 25 to November 8, when

Pan-Pacific Trade Country to Benefit by Coming Conference delegates from practically every country bordering the Pacific Ocean gather as the guests of the Pan Pacific Union. At that time plans will be formulated for future inter-racial cooperation in bringing about the development of those interests common to all of the peoples of the Pacific area. The men will represent government departments, commercial bodies and financial organizations.

Realizing that the western ocean is to be the future theater of the world's commerce and that the

traditions of peace which have heretofore prevailed in the Pacific can best be maintained by the leaders in all lines of thought and action in the countries bordering its waters, the group proposes to establish among themselves a foundation of mutual confidence on which will be built all future cooperative effort. The keynote of the conference will be sounded in a message from President Harding which will be read by the governor of Hawaii. Secretary of Commerce Hoover, in addition to appointing several delegates from his department, will also send a message. The United States Chamber of Commerce will be represented by a delegation of five members, while every country and most of the principal cities bordering the Pacific will have one or more delegates.

A plan to resuscitate the electric railways of California by means of an amendment to the constitution of the state by placing the right to grant franchises in the hands of the **Proposed Act Would Relieve Electric Railways** State Railroad Commission is being sponsored by the California Real Estate Association. The amendment will be voted on at the November election and vigorous steps are being taken to assure its passage. It is hoped that the amendment will make available better transportation facilities.

The association is building its campaign upon the following premises:

1. Transportation is the cornerstone of civilization; it is the handmaid of commerce, the barometer of real estate values and the dominant factor in community development.
2. California communities are facing a transportation crisis. Literally no extensions are being made by electric lines; motor transit is developing haphazardly; the service is below par, and the prospects for rational development for the future are dismal.
3. Transportation developments depend upon the availability of capital for such purposes.
4. The present chaotic franchise system discourages investors and makes it impossible to secure new capital for the improvement and expansion of existing transportation facilities.
5. The only hope of getting a resettlement of present franchises is through the enactment into law of a provision for the granting of modern standardized franchises, and the securing of a unified control of all forms of transportation.
6. The Railroad Commission is the logical seat of control for all matters of transportation. Assisted by a competent body of experts and well equipped engineering departments they already exercise general oversight of our transportation. (a) Their approval is necessary to the granting of a franchise by local authorities. (b) The Commission controls capitalization and financing. (c) And it fixes the rates.

Placing the franchise granting power in the hands of the Railroad Commission will make it possible to secure a unified, impartial and scientific solution of all transportation problems. Inasmuch as the nature of the franchise, and the terms and conditions contained in them, vitally affect both capitalization and rate fixing—matters already in the hands of the Commission—it will simplify the whole problem of transportation development to secure a unified control of all matters affecting the organization of a well-rounded system of transportation which will take care of the present emergency and meet the needs of the future.

Letters to the Editor

Supervision By Power Company of Electrical Features of Pumping Installations

To the Editor:

Sir: This will refer to your inquiry regarding the practice of the San Joaquin Light & Power Corporation with regard to the installation of electric irrigation plants on its lines. This company believes, from years of experience, that it comes within the jurisdiction of the power company to see that the electrical features of a pumping installation are such that the plant will require but little "trouble shooting," thereby adding to the consumer's satisfaction, his economy of operation, and at the same time benefit the dealer who sells the plant as well as the service of the power company.

When the centrifugal pump for irrigation purposes was first introduced there was a tendency on the part of some dealers to sell the pump and motor and leave the installation, especially the electrical features, to chance—often to some wireman unqualified to properly install the job. After the plant was sold and the money collected and after the salesman was gone, the purchasers' troubles were left to the power company, who had to be on the job every month to render service and to collect the bill, and as a consequence had to take the responsibility for the successful operation of the plant. Consequently the power company has adopted certain standards to protect its customers and itself. These standards have been worked out through several years of experience and are practical and inexpensive.

The power company does not require anything fancy in the matter of wiring standards. The job must be put in with wire and switches of proper size and up to the requirements of the standards of the Industrial Accident Commission. If these standards are followed the result will be a job of the proper sort. It is required that overload, time element relays, and low voltage release coils be installed; that the wiring be done in conduit and that the conduit be securely strapped up; that provision be made for the installation of the meter, and that the job be done in a workmanlike manner.

A motor on a farm will not operate successfully unless it is very carefully installed. We have an electrical engineer digging into this matter of service to agricultural consumers, preparatory to making tests and inspections where necessary. We have always fought the consumers' battles and we intend to continue to do so.

The stage of development has been passed where the pump manufacturer sold his pump to the local dealer—usually a gas engine man who bought a motor from some other manufacturer, and then hired a wireman or the power company to install the wiring and connect up the plant to the lines. That scheme of things put too many men on the job. It divided the responsibility and the farmer had to deal with too many concerns.

When a new plant was ready to start, the local dealer, the pump manufacturer's salesman, the motor salesman and the power company's representative

were all on the job. The farmer regarded with suspicion all this aggregation of salesmen. He would take a look at them and then at his little plant and wonder just how much actual value in machinery was represented after sales expense was deducted. The farmer paid his money for his plant and everybody "beat it" except the power company man who had to stick to the job and sit up with the infant, hold its head and dress its hot bearings, pack the pump, develop the well, oil the motor, put in fuses and collect the power bill. No one shouldered any responsibility except the power company. When the farmer hooked up to our lines and our meter was set, he became our consumer and it was up to us to look after his troubles.

All this was good experience for the power company, but it was expensive. However, it has resulted in the establishment of certain requirements and electrical standards that are beneficial alike to the pump manufacturer and the dealer, the consumer and the power company. This early experience and several years of subsequent study have developed an absolutely successful scheme of operation.

The pump man has since come to appreciate the necessity of taking the installation seriously and is assuming responsibility to the farmer for the whole job—pump, motor, wiring and installation, and most important of all, the rendering of service after the plant has been installed.

Too much care cannot be given to the actual work of installing the plant. Dealers in some instances have been prone to shave their prices when competition was keen, and take it out of the wiring on installation charges. This could not result in anything but grief. If the price has to be shaved, the last place to think of cutting costs is in the installation. A certain amount of labor and materials are necessary and the job cannot be successful unless these are applied. The manufacturer can build a beautiful pump of high efficiency and high-class workmanship, and he can build on to it a first-class motor, but if he ships it out to some dealer who drops it on a wood foundation and permits the full weight of the suction pipe to hang from the elbow of the pump, and then wires it up in a haphazard manner, he is not guarding his own interests nor the interests of his customer, for the pump will not operate six months. When the dissatisfied purchaser thinks of his troubles the only thing he will see is the name plate on the pump.

A. M. FROST,

Manager Fresno District,

San Joaquin Light & Power Corporation.

Fresno, Sept. 5, 1922.

The Force and Direction of the Wind Controls the Movement of the Straws

To the Editor:

Sir: In a recent issue of your publication the following statement was made, "Any observer of climatic changes within the electrical industry who has been watching the cross currents, eddies and local showers might well forecast a storm brewing. To be exact, all does not appear to be well, particularly in the merchandising and contracting branches of this industry."

This statement appeared under the caption "Straws Show Which Way the Wind Blows," and

while it is conceded that all is not well in the electrical industry, it is gratifying to be able to present information showing a decided turn for the better, and indicating what can be accomplished by a concerted move in the right direction.

The Pacific States Electric Company stands definitely committed to assist the electrical industry in any procedure that will overcome the destructive operations of irresponsible contractors and dealers. Such contractors and dealers who are interested only in doing work cheaply and selling inferior merchandise at a low price.

We have consistently advocated a combination of organizations in the Pacific Coast territory for the purpose of studying the problem and devising a solution that will effectively protect the electrical industry and the electrical consumer from the pernicious activities of this group.

That the wind determines which way straws blow is equally true with the statement that straws show which way the wind blows. We submit that the electrical industry can raise a wind that will clear the Pacific Coast of the straws which are at present irritating the industry and the public alike, and that this has been demonstrated in the results accomplished by "Check" Seal advertising efforts.

An investigation conducted in Southern California last September shows that the irresponsible contractor-dealer group was not only getting the bulk of the residence wiring business, but was rapidly cutting down the potential business of responsible contractors, responsible dealers, electrical manufacturers, jobbers, power companies and in fact every branch of the industry that represents investment and constructive effort.

In a word, these "casual" contractors were deliberately trading upon the electrical consumer's lack of technical knowledge, and sacrificing the interests of the entire electrical industry.

In order to obtain installation contracts, this group was slashing prices, often using sub-standard materials, and what is more important was constantly reducing the number of outlets per job in order to compete on a price basis, at the same time making little or no profit for themselves.

The effect of such methods is obvious, for even if we disregard the constantly increasing dissatisfaction of the electrical consumers resulting from such a practice, we cannot overlook the fact that the growth and very existence of the industry depends upon the outlet for the sale and use of current, wiring devices and appliances, and that any increase in any branch of the electrical business can only be in ratio to the increase in outlets installed.

To indicate the downward tendency of the electrical business under such circumstances, the following figures secured from reliable sources are submitted:

In 1920 the average number of outlets installed by responsible contractors, who constitute about 35% of the total number of contractors in the Los Angeles District, was 14, as against 12.8 by the casual contractors, the general average for the year being 13½ outlets per job.

During the same year the Qualified Group installed 58% of the jobs and 60% of the outlets. However, in the following year, 1921, this condition changed.

In 1921 the Qualified Contractors, whose number

still comprised approximately 35% of the total number in the territory, installed but 32% of the jobs and 45% of the outlets. In terms of outlets per job, the Qualified Group had increased the average number per job from 14 in 1920 to 15½ in 1921, while on the other hand, the average number of outlets installed by the Casual Group had fallen off from 12.8 in 1920 to 8½ in 1921, or about 30%, reducing the general average from 13½ in 1920 to 11 in 1921, a decrease of 20%.

For example, let us assume that one thousand new homes are erected in any given territory where such conditions obtain, and that an average of 15½ outlets are required for each home to render adequate electrical service. Applying the conditions of 1921 to these 1000 homes, 270 would have been wired by Qualified Contractors, while 730 would have gone to the Casual Group. Had the Qualified Group wired the entire number of homes it would have represented, in accordance with the average established, 15,500 additional sources of income to the industry, or 15,500 outlets. As a matter of fact, however, there would be installed only 10,755 outlets, the difference of 4,747 outlets being irrevocably lost to the industry. This loss represents thousands of dollars to electrical manufacturers, jobbers, dealers, contractors and power companies.

The following facts indicate what can be accomplished by concentrated effort. A review of the results of the operation of the "Check" Seal program is found by comparing the first five months of 1922, during which the program has been in operation, with the first five months of 1921.

During the first five months of 1921 the Qualified Group installed 32% of the jobs and 45% of the outlets, while in the first five months of 1922 they have installed 48½% of the total number of jobs, and 58% of the outlets.

The number of Qualified Contractors in the period of 1922 referred to continued about the same as compared with the total—35%. During the first five months of 1922 there was a total of 50% more jobs let in this territory than during the same period of 1921. Of the new business the Qualified Group of Contractors obtained 78% of the total. This indicates that as time goes on and the total volume of contracting business grows, the Qualified Contractors can hold their own. It also proves that the public is willing to consider good workmanship, standard materials and fair prices against the price cutting, substandard materials and workmanship of the Casual Contractor.

This result is not due to any unusual activity in any one month. It represents a steady, healthful gain on the part of the responsible electrical contracting group. Nor is the effect of this campaign beneficial only to the Qualified Group, for we note with interest that during a like period the Casual Group has been installing an average of three outlets more per job than it did in 1921, indicating that the pressure brought to bear works both ways to the advantage of the industry.

This array of facts is presented to indicate clearly that the force and direction of the wind controls the movements of the straws.

TRACY E. BIBBINS, President.

Pacific States Electric Company
San Francisco, Sept. 4, 1922.



WHEN the ten-million-dollar Oak Grove project of the Portland Railway Light and Power Company is completed the penstock lines for the three 25,000-kw. units will traverse the slope from which this view was taken. The project is located on the Clackamas river, about sixty miles from Portland.

Storage facilities will be developed which will permit the utilization during the entire year of three times the present minimum flow of the river. Actual construction work is now under way and this important new project is planned to be put in operation sometime during 1923.



The Spokane Electrical Service League in cooperation with a local contracting firm exhibited this attractive six-room electrical home to the people of Spokane, Washington. Over nineteen thousand persons visited the home.

Spokane's Model Electrical Home

By R. B. McELROY

KEEPING pace with the drive toward the education of the public regarding the manifold advantages of electricity as a household servant, as well as to suggest the installation of convenience outlets, that these advantages may be enjoyed, the Spokane Electric Service League, in cooperation with a local building contractor, recently erected and displayed the latest electrical home to be built in the West.

Careful planning, under the direction of the officers of the League, resulted in an excellent electrical installation. The wiring was done for the building contractor at cost by members of the League. All appliances, fixtures, floor lamps and stand lamps were loaned by the Spokane Electric Service League members, with the stipulation that they could be purchased at cost. These fixtures and appliances were all chosen by lot, after a selection committee had been appointed to secure them. This system of obtaining the necessary devices was found to be very fair and satisfactory to all of the members of the league. A statement to this effect was prominently displayed in the home.

A total of 152 lighting, heating and convenience outlets were installed in the house and each was connected with some piece of electrical equipment. Considerable comment was attracted by the radio receiving set which was connected through outlets in

the living room and ball room. Radio concerts that were broadcasted by stations as far away as Seattle were received in the afternoon and evening. The crowds were so enthusiastic over the concerts that it became necessary to place a horn on the outside of the house, as during the "rush hours" only fifteen people were admitted to the house at a time.

The Spokane electrical home is a six-room house with full basement. The living room measures thirty-three and one-half feet by sixteen and one-half feet, with the rest of the rooms of proportionate size. A ball room, den, laundry room, fruit room and furnace room are located in the basement. Hollow tile faced with magnesite stucco is used for the exterior of the house. At night, the white finish sprayed with marble chips gave a very striking appearance when the house was illuminated with flood lights. The furnishings for the home were supplied by the largest household furnishing concern in Spokane and were in excellent taste.

The home was thrown open to the people of that city on July nineteenth and was open daily until August second. During the fifteen-day period 19,405 people went through the house.

All of the branches of the industry were particularly pleased with the results and are reporting a considerable increase in their business. Every new home is having from six to twelve convenience out-



Living room of the attractive bungalow. No ceiling fixtures were used, wall brackets and stand lamps furnished the illumination for the room.



The breakfast nook having an east exposure is a part of the kitchen. Two outlets for appliances were placed within easy reach of anyone seated at the small table.



A silver finished chandelier and wall brackets supplied means for illuminating this dining room. Ample provisions for appliance outlets were made.



Daintiness is expressed throughout this bed room, which was illuminated by a center ceiling fixture. Two bracket outlets were located near the dressing table.

lets installed and many people have inquired as to the possibilities of bringing the wiring of their homes up to date.

The official dedication of the home was held at two o'clock on the opening day and at that time George A. Phillips, chairman of the publicity bureau of the Chamber of Commerce, addressed four hundred people who were assembled at the house. Mr. Phillips' talk dealt with the advantages to be derived from such an educational display. Mrs. S. E. Hege, president of the Women's Clubs of the city, officially unlocked the door and invited the people of

Thus everyone who was a user of electrical energy was given notice of the display.

The invitations read as follows:

Your Electrical Servant
invites you to visit

SPOKANE'S MODEL ELECTRICAL HOME

Corner Fourteenth and Bernard

July 19 to August 2, inclusive. Open 10 a.m. to 10 p.m. daily.

Official dedication 2 p.m., July 19.

SPOKANE ELECTRICAL SERVICE LEAGUE.

This was brightened up by a cartoon of a man in a dress suit radiating electrical energy.

The home was in charge of a general committee which handled all matters pertaining to it. This committee appointed a publicity man, who secured the required recognition from the local newspapers, a finance chairman and an appliance selection committee already mentioned. This general committee was composed of R. B. McElroy of the Washington Water Power Company, who acted as chairman, Warren Oliver, E. W. Murray, R. C. Steeple, all electrical contractors, and F. P. Carson of the Western Electric Company.



A coal burning steam furnace is here seen connected with an electrical furnace tender. This appliance permits the owner to maintain any desired temperature. The coils for the refrigerating plant are seen at the right of the picture.

the city to visit the home. Thus the electrical home was tied up with the entire community and the good will of the people of Spokane was secured from the start. In addition, moving pictures were taken of the opening ceremony and were displayed at the leading moving picture house.

A definite route for passing through the house was laid out so that the visitors would be able to see every room. As the interested people entered the living room, they were presented with a ticket that entitled them to a chance on the miniature model of the electrical home. This model had previously been displayed in several of the display windows of the city. The contest caused considerable comment and permitted those in charge to keep an accurate check upon the number of visitors. Upon leaving the home the stub was deposited and the visitor was presented a sixteen-page illustrated folder which contained suggestions on house wiring and illumination. This folder was well filled with plans and descriptions of modern installation. Uses of convenience outlets were particularly stressed.

During the fifteen days that the house was open to the public a demonstrator was present in each room of the house. This man called attention to the electrical features of the room and gave suggestions as to the proper location of outlets in rooms that the visitors cared to ask about.

Prior to the scheduled opening of the electrical home, small printed invitations were sent out with the monthly bills of the power companies of the city.



An iron, a washing machine, a plate for heating the clothes boiler, a mangle, all electrical, and two wash tubs make up the equipment for this electrical laundry room. The hot water tank, which is heated electrically, is also situated in the laundry.

The house was built by A. J. Chitty & Company, local building contractors. The home is now on the market at \$15,000, complete with all furnishings, and several people are figuring on purchasing, but the contractors are reported to be not particularly anxious to sell as one of them had originally planned to occupy the home himself.

Spokane's electrical home was run upon a particularly economical basis. The cost of advertising was approximately five cents per person, and considering the total attendance, which was in the neighborhood of twenty thousand people, this is an extremely low advertising charge. Since business has been increasing rapidly since the display in the electrical home the members of the League are highly pleased with the results.

Remotely Controlled Generating Stations

By A. T. PARSONS

THE problem of the utilization of the streams in southern California for irrigation has been almost completely solved, and except in flood-stages there are few drops of water that reach the ocean without doing their part to help along the cause of agriculture. Utilization of the power resources is not so complete, although many important installations have been made. This is largely because in only a few instances have local conditions been favorable to development of any considerable amount of power at one point. In fact, for several years past the tendency has been to develop in large stations at distant points, the power required by the growth of population and industry, rather than to incur the high unit costs for attendance inevitable in the ordinary station of only a few hundred horsepower capacity.

On the other hand, the Ontario Power Company, supplying several towns and the surrounding agricultural district in the vicinity of Ontario, has recently constructed two plants of small capacity, plants which would be unprofitable if it had been necessary to pay the wages of even one attendant per shift at each station.

These plants are in San Antonio Canyon, about 40 miles east of Los Angeles. The drainage area of the stream above the point where it leaves the canyon and forms a fan-shaped gravel wash on the plain below, is about 27 square miles. The elevation of the watershed ranges from 2,000 ft. at the mouth of the canyon to 10,080 ft. at the summit of San Antonio Peak. The average annual precipitation at the mouth of the canyon is 15 in. but is considerably higher over most of the watershed. Along the lower seven miles of the canyon, which is where all the present power development is situated, there is relatively little side-drainage, the principal runoff coming from the upper part of the watershed. The average flow for five months during the late winter and early spring is 20 sec.-ft. This is exceeded only during flood periods. The flow gradually de-

IN THE economy of the nation, water power is the most desirable form of power, since it does not use up any of our natural resources, as steam power does, for no matter how much we take out of our rivers and streams, next year and the years after they flow just the same. But there are only a few very great water powers like Niagara Falls and the power of the Mississippi at the Keokuk dam, for most of the hydraulic powers are smaller. Furthermore, while most of the big powers have been developed, there are many small powers still undeveloped. However, there is a limit in size, below which it is not economical to develop power by the previous methods, due to the cost of operation; but with the increasing development of electrical engineering, this lower limit has rather increased. While a small station, which cannot afford high-class engineers for its control and operation, may have been fairly successful when it was an isolated station, and any trouble therefore only local, now, when tied into the huge electric-distribution systems which cover the country, a much higher safety factor of operation is necessary for the small station, since any serious trouble may involve the entire system. But the safety and reliability of a station is no greater than the character of the minds which direct and control its operation. Therefore, aside from the economy resulting from the saving of the cost of attendance, reliability of operation makes it preferable to control, and operate such small stations at a distance, from a large station which can afford the quality of attendance giving the assurance of first-class operation. And finally, with the present-day development of electrical engineering, it is possible to make the operation of the small station entirely automatic and thereby take its control entirely out of the hands of the rather indifferent class of attendants economically available for such stations, and give it the safety and reliability corresponding to the skill of the high-class engineers who control its operation; that is, the designing engineers who have devised and built its automatic control. Thus the automatic hydro-electric station is not merely an advance in economy, which makes the operation of small stations possible, stations which were previously below the economical limit, but it is an equal advance in the safety and reliability of the operation of these stations, and of the systems with which these stations are connected.

CHARLES P. STEINMETZ.

creases, the minimum being about 8 sec.-ft. At the mouth of the canyon the small amount of water that is not diverted for irrigation sinks into the gravel wash, some of it reappearing several miles farther south, and finally flowing into the Santa Ana River.

To the engineer, an unusual historic interest attaches to San Antonio creek, because it was the scene of one of the earliest hydroelectric developments, probably the earliest where power was transmitted at higher than the generating voltage. Early in 1892 the San Antonio Light and Power Company installed two impulse turbines operating under 400-ft. head and each direct connected to a 120-kw. generator. Power was transmitted at 10,000 volts to Pomona, distant 15 miles.

The present development of power in the canyon is at four points. One of these, the Sierra plant of the Southern California Edison Company, was constructed in 1900, when the conduit for the old San Antonio plant was extended half a mile downstream, adding about 200 ft. to the available head. The old plant was then abandoned. The other three plants comprise the entire generating system of the Ontario Power Company.

Power House No. 1 of the Ontario company was constructed in 1902 at a point about one mile above the mouth of the canyon and just above the intake of the irrigating conduit of the San Antonio Water Company. The power intake is about $2\frac{1}{2}$ miles farther upstream from which point a concrete gravity line extends to a small forebay.

The penstock is composed of 2,000 ft. of riveted steel pipe, 24 and 22 in. in diameter. The static head is about 700 ft. There are three impulse turbines each direct connected to a 250-kw. generator. At the higher water stages there is sufficient water for all three units at full load. At lower stages only two units are operated.

With the construction of the two plants above described, the possibilities for the economic development of the power resources of the stream appeared

for the time being to have been exhausted. In fact, several years elapsed before another plant was built. In the meantime, the demand for power in the territory served by the Ontario Power Company increased, the cost of fuel oil for steam plants more than doubled, and perhaps most important of all, the

the three, and thus obtain the maximum possible efficiency at all stages of load and water consumption.

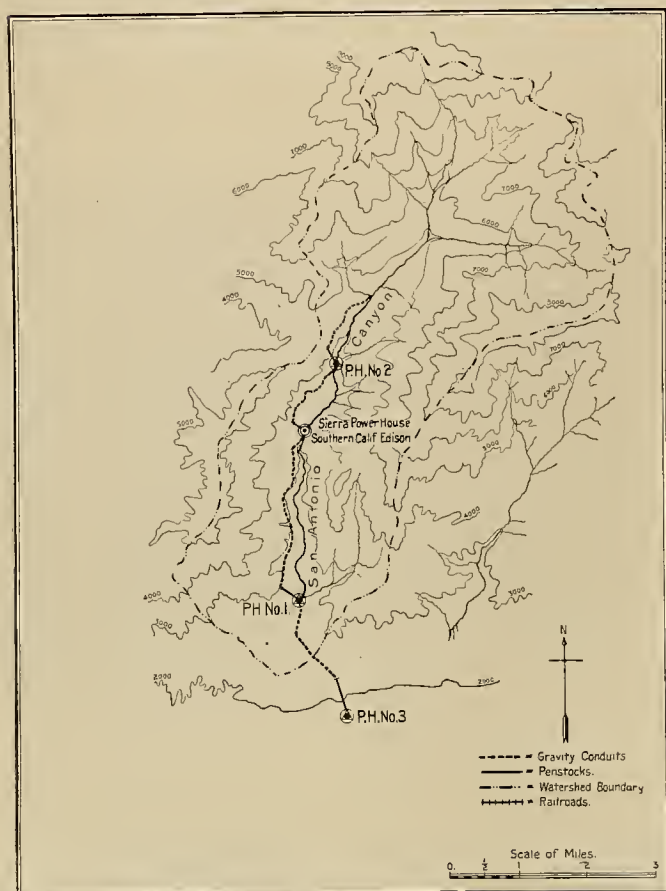
Jet deflectors actuated by the governor divert any desired part of the jet from striking the wheel, thus providing speed regulation under minor variations of load.

The operator at Plant No. 1 controls Plant No. 2 by means of a double-throw switch. When the plant is operating on full load, both power nozzles are full open, and the bypass nozzle is closed. If it is desired to reject all of the load, the operator throws the switch to the closed position. A series of relays actuates the nozzles, closing the upper one first, and at the same time gradually opening the bypass nozzle. Limit switches are used to prevent any jamming of the mechanism. In starting the plant, the operations are reversed.

Any load condition between full on and full off may be reached and held by manipulating the switch at Plant No. 1. Synchronizing is accomplished through the remote control of the power nozzles, the synchronoscope and main generator switch being on the panel with the nozzle control switch in Plant No. 1.

Except during flood periods, all the flow of the stream passes through the penstock. The water consumption of the unit is governed by the water level in the forebay, which is read from a long distance indicator by the attendant at Plant No. 1.

During the three years that this plant has been in operation, no time has been lost because of shut-downs. The results in general have been so satisfactory that the company has just placed in service

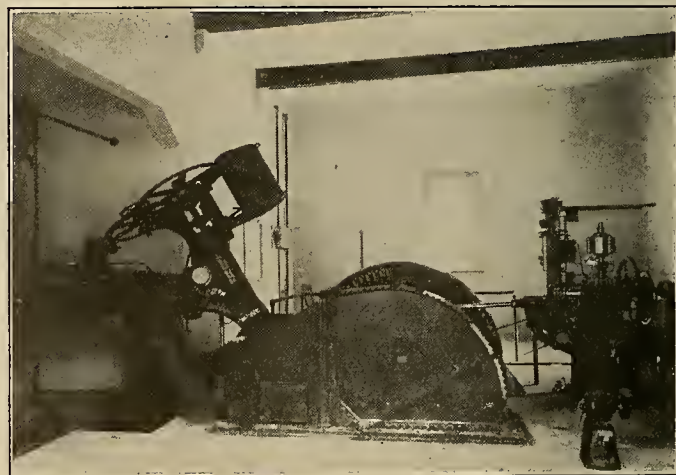


The San Antonio watershed, showing the three plants of the Ontario Power Company. The operator at Plant No. 1 controls the generating equipment at Plant No. 2. Power house No. 3 is entirely automatic in its operation. All of the water used for generating power is subsequently utilized in the valley below for irrigation.

remote control or semi-automatic type of station was developed.

In 1919, Plant No. 2 of the Ontario Power Company was constructed. The point of diversion is about four miles upstream from Plant No. 1. From here, 3,280 ft. of 30-in. cement pipe extends to the forebay, which is a reinforced concrete tank 10 x 12 x 12 ft. The penstock is composed of 1,413 ft. of 24-in. riveted steel pipe. The power house is situated a short distance above the point of diversion for the Sierra plant of the Southern California Edison Company, already described. The static head is about 310 ft., and the net effective head at full load, 290 ft.

The station contains a single overhung double-nozzle impulse turbine with a capacity at full load of 550 hp., direct connected to a 500-kva. generator with direct connected exciter. Besides the two power nozzles, a third nozzle is provided to act as a bypass when the plant is shut down, since no storage is available. All three nozzles are operated by electric motors provided with limit switches, interlocking in order to maintain fixed relative action between



Interior of the remotely controlled 500-kva. hydroelectric generating station of the Ontario Power Company, showing the motor operated nozzles and the automatic governor.

a completely automatic plant, known as No. 3, near the mouth of the canyon.

The water supply for the plant comes from the irrigating conduit of the San Antonio Water Company. The point of diversion is just below the Ontario Company's Plant No. 1. About one-half mile below the intake, the conduit is joined by a tunnel driven by the water company in the gravel bed of the stream, which diverts most of the underflow. From this point the conduit follows the eastern side of the

canyon to a point about $1\frac{1}{2}$ miles below the intake. Here the grade line of the conduit is so far above the cultivated land of the plain below that power development is possible without interfering with the rights of irrigators.

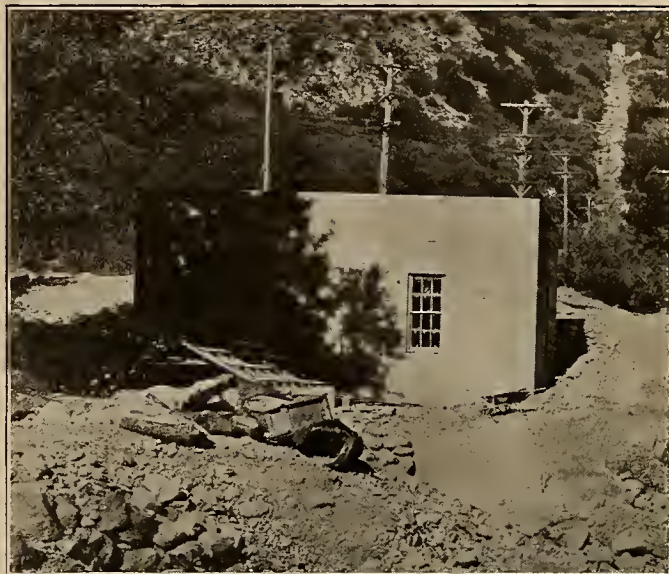
A penstock 2,959 ft. long makes available a gross head of 284 ft. The pipe is of riveted steel, the upper half being 22 in. and the lower half 20 in. in diameter. The effective head is 250 ft. at full load. The plant itself is almost an exact duplicate of Plant No. 2, except that, as already noted, it is entirely automatic, the generator going on the line and being synchronized without requiring attention from the operator at station No. 1.

The equipment consists of a 500-hp. single overhung double-nozzle impulse turbine direct connected to a 400-kva. generator with a 12-kw. direct connected exciter. The mechanism for opening and closing the power nozzles is similar to that at Plant No. 2, except that no bypass nozzle is provided, any water not required for the operation of the plant being handled by the jet deflectors.

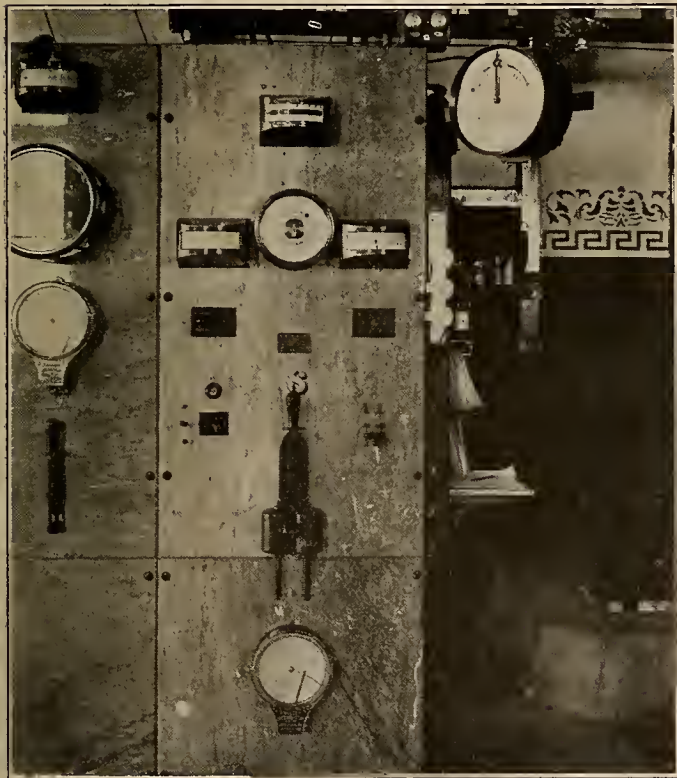
At both Plants No. 2 and No. 3 an elaborate system of protective devices has been provided to prevent overload, overspeed and hot bearings. In the

usually, necessitating a visit to the plant. This is desirable in order to determine the exact nature of the trouble and correct it. Occasional visits are required to each plant for inspection, oiling and adjustment of the equipment.

Through the construction of Plants No. 2 and No. 3, the output of hydroelectric energy of the



Remotely controlled generating station of the Ontario Power Company in San Antonio Canyon. This plant is operated from a switchboard at a larger plant 3.5 miles down the canyon. Occasionally a patrolman visits it to oil the equipment and make minor adjustments.



The switchboard in the main plant of the Ontario Power Company from which the operator controls a 500-kva. generating station 3.5 miles distant.

case of hot bearings, a thermostatic relay opens a master control circuit which closes down the plant until an inspection is made and the relay again set. Thermal relays are used to disconnect the generator from the line in case of overload. An emergency tripping device on the governor protects against overspeed. To start the plant after a shut-down due to any of these causes, the relays must be set man-

Ontario Power Company has been virtually doubled and several millions of kilowatt-hours per year furnished to consumers that would otherwise have had to be steam generated. Had it been necessary to place operators at each station, the attendance charges would have been prohibitive. The entire development in San Antonio Canyon by private enterprise is notable, not only as illustrating the efficient utilization of both water and power resources as a result of cooperation between the various interests involved, but also because of the foresight and sound judgment displayed by the management of the power company.

What a Dime Will Do

Some one with a penchant for statistics has figured that a dime's worth of electricity, based on a price of 10 cents per kw-hr., will perform the following services in the household:

Operate a 16-c.p. lamp for about an hour. Operate a six-lb. flat iron for $1\frac{1}{2}$ months. Do a washing equivalent to 20 sheets each week for about $2\frac{1}{2}$ months. Operate a vacuum cleaner long enough to clean about $\frac{1}{10}$ of an acre of carpet. Operate a sewing machine for 20 consecutive hr. Drive an electric fan four hr. a day for nearly a week. Brew $2\frac{1}{2}$ gal. of coffee in an electric percolator. Operate a heating pad for from $\frac{1}{2}$ to 1 week depending upon the heat used. Operate a foot warmer five consecutive hr. Operate a water pump long enough to raise 100 gal. 1,100 ft. Make 100 slices of toast.

Relation of the Chain Store to Manufacturer and Retailer

The Fourth of a Series of Articles Devoted to an Analysis of the Modern Tendencies in the Marketing of Products and the Advantages of Different Types of Distribution Methods as Applied to Various Classes of Goods

By E. A. KINCAID

IF a manufacturer finds it to his interest to sell "over" the jobber directly to the dealer he will have to decide between one or more of several types of retailers. Of these the general store is one of the oldest and most interesting. It developed from the old trading post of frontier days when each post had its general store to which settlers came with their furs, skins, livestock and produce to be exchanged for provisions. To meet the demand of the time such stores carried a great variety of goods and it was not uncommon to find hardware, drugs, implements, groceries, harness and saddles and dry-goods in a single establishment.

Some of these stores still exist and where they do, they function well, for they often act as bankers for hard-pressed settlers who do not have bank credit to draw upon. But for the most part the general store has passed into oblivion along with those heroic pioneers who patronized it.

Transition of the Trading Post

The old trading post expanded into a village and then by easy and rapid stages into town and city. With the growth of population, towns became able to support rival stores and some of these lopped off the less profitable lines one by one until they became establishments with but a single line. Thus the general store was the forerunner, if not the progenitor, of the specialty store. While it may be said that the specialty store as a type is older than the general store, here in the West the order was generally reversed. But quite regardless of the order of appearance, the tendency toward the specialty store has not subsided. On the other hand the appearance of improved methods of production and distribution, together with the appearance of new products, has stimulated the movement toward specialty stores and the end is not yet in sight.

Departmental merchandising appears to have originated in specialty dry goods stores. While it is not certain as to whom credit is due for the development of the departmental idea, it is generally agreed that conditions following the Civil War greatly encouraged its application. After the conclusion of that struggle there came a period of economic readjustment and declining prices. This situation was also accentuated by the growth of the railroad net and the improved physical distribution of the expanding output of factories no longer needed in the conduct of war. Declining prices generally mean a reduced volume of sales which can only be solved by offering goods at prices in harmony with the level of purchasing power. One way to meet the decline in demand is to buy at lower levels. The merchants of the post-bellum period approached the problem from this angle and they saw but one

possibility, that of buying from the manufacturer at the jobber's discount. To obtain such concessions from the manufacturer it was necessary for the merchant to demonstrate his ability to buy in wholesale quantities, but this in turn depended upon the introduction of retail merchandising methods which would give the required turnover of stock. To gain this end certain merchants reorganized their buying methods, reduced their prices, contented themselves with small margins, largely the result of lower net profits, which they multiplied by an increased number of turnovers of stock organized by lines, merchandised by lines and made to stand or fall on their record by lines. Thus it came about that economic pressure broke down the traditional movement of goods from manufacturer to jobber to retailer, and it may be said that the department store is in part the result of the adoption of merchandising methods which would give that volume of sales essential to induce a reluctant manufacturer to break with tradition.

Post-war Conditions Influence Distribution

The same forces produced the chain store. Low selling prices in a period of high living costs while deflation was in process following the Civil War resulted in the organization of some of the earliest chains. But the high prices which began their long upward climb about 1896 had more influence than any other one factor. Thus it has come about that the price level in the period from 1896 to the conclusion of the recent war was the one during which the chains made most of their progress. Like the department store, the chain made a place for itself because of an advantageous combination of the fundamentals of merchandising. Lower prices, narrower margins, smaller profit and increased turnover was the happy combination which spelled success for the chain store. It may be said that the chain store is the result of the carrying over of the department store idea into a larger expressiveness and a greater scope. Instead of many small stores under one roof, the chain has many separate units under one management. The overhead is distributed among the units and each one stands or falls on its record as a profit-maker.

How Chain Stores Started

The entering wedge of chain store distribution was the result of (a) the fact that some merchant, who succeeded in the conduct of a specialty store, bought another in his own community, then another in a near-by town and so on until he had a small chain; (b) Other chains were formed by the simultaneous purchase of a number of stores by a corporation organized for the purpose. Regardless of the form of origin, the outstanding result was the

fact that the chain had buying power. How long could the weight of a traditional distributive system hold out against a new type of retail distribution which possessed the very economic attribute which was so essential to success in the field of production? If large-scale production meant a low cost per unit of output, why would not the same principle hold for distribution? And, if two organizations operated on this principle, what could keep them from co-operation? Nothing except sheer economic blindness, for the very forces of economics would bring them together. Thus it follows that economic law is breaking down the barriers to its free play even in this day of restricted competition.

Of the three types of retail institutions here so briefly referred to, the chain store is the most unique and the most interesting. Its phenomenal growth and its merchandising possibilities, its potentialities, so far not fully grasped, have made it the most outstanding feature of the modern retail distributive situation. A good deal has been said for and against the chain but the facts have not always been fairly presented. The enemies of the chain have viewed it as a menace and its friends have overstated its advantages. The actual facts do not warrant extreme statements in either respect, for the facts are only in the process of development and just what the chain store actually is must rest with the future.

Extent of the Chain Store System

There are at present about 75 responsible chains operating in the grocery field and these include about 40,000 stores. In no field is there a greater number of chains and yet they make but a slight dent in the grand total of 350,000 retail grocery stores which the country now has. The seventy-five chains do not make a more favorable comparison with the 4,000 wholesale grocers. It may be said, therefore, that the chain is in its infancy and that we must concern ourselves chiefly with possibilities which this type of organization embodies. What the chain store has so far accomplished is the result of the efficient utilization of merchandising possibilities of high class goods, efficient service, quick turnover and the cash and carry system.

A mere enumeration of these items is not sufficient as the success of the chain up to this time is the result of the successful combination of the uttermost possibilities of these fundamentals. It is necessary to understand that the chain has so harmonized these essentials in practice that it has been able to combine the functions of the jobber and the retailer. Thus it has eliminated a good deal of overhead expense. Here is an important matter. Overhead is a burden on the flow of goods. The more hands that the goods must pass through, the greater the burden.

Principles of Success of Chain Stores

The chain attacks this burden in two ways.

(a) It reduces the aggregate of overhead by curtailing the mechanism of distribution and consolidating the functions of jobber and retailer in one hand.

(b) It reduces the burden of overhead per dollar of sales by speeding up the turnover. The first result is accom-

plished (1) by the elimination of traveling and specialty salesmen, those necessary functionaries where distribution includes the jobber; (2) purchases in larger quantities than the wholesaler can use; (3) purchases concentrated in the head office of the chain, and (4) delivery directly from the manufacturer to the chain warehouses, contribute to this result.

(c) The second result is obtained by turning stock rapidly, varying from twelve to twenty-five times in the grocery trade, by selling for cash, by making no deliveries, by low margins of net profit, usually less than three per cent on sales in the grocery trade, by sales of fresh goods, by cleaner and more attractive stores, and by goods plainly priced with one price for all.

While each of these points must be given due and separate consideration in order to grasp the strength of the chain, the actual power of the chain type of organization may be summarized in its great buying power and low margin of profit. What chance has the individual retailer to hold out against a type of merchandising that operates on a gross margin of from 13½ per cent to 18½ per cent when such a merchant maintains that he must have a gross margin of thirty per cent?

Clearly the individual retailer must give ground to the chain store, but it cannot be said that he must disappear. In the first place, the essentials of success in retail merchandising are almost as fully available for the individual merchant as they are for the chain store. No wide awake retail merchant need fear the chain store. He can have a clean and attractive place of business, courteous employes, good values at reasonable prices, more frequent turnover and its correlary advantage of fresh stock and fewer calls from the jobber's salesmen, who are so often order-takers rather than salesmen. A merchant successful in both service and chain store operation asserted that with knowledge gained from the latter he could open a service store at any time and hold his own alongside the very best chain store. This assertion is not exaggeration, but it must be borne in mind that the fundamentals of success in merchandising have been worked out by experts in the staff of the chain and passed down by them to managers of the units.

Retailer Should Profit by Example

Thus we arrive at the next point, for it must be recognized that some one must do the same sort of thing for the service store if it is to maintain its position in the present scheme of distribution. What organization will do this? There seems to be a recognition of the necessity of an awakening on the part of service store merchants and their wholesale friends. If this awakening comes about much can be done to retard the growth of the chain store. If it does not materialize in an effective way the invasion of the chain will proceed apace, for it is simply the result of utilizing the latent possibilities in the present system of distribution. But even if the service stores continue to function in the same old way it is not conceivable that they will be utterly routed, for several reasons. (a) Many people are not able to pay as they go and they must patronize a retail establishment that will extend credit. (b) Others will not personally attend to the buying of goods and these will generally prefer to use the telephone.

(c) Still others will require a delivery service and other sorts of service which are thought to be in keeping with their social standing. In general the service store will continue to function, even if in a limited way, for the sake of two classes of people—the poor and improvident and the wealthy. The service store lives because of the misfortunes, the lack of thrift and the social ideas of a considerable number of persons who will not soon disappear from our society.

As for the others, the chain store is an expression of that efficiency which actuates the household affairs of a large number of buyers. It is an incentive to the very thrift which it gratifies and because of this the chain store is a distinct economic gain for society in general. That this is true is demonstrated by certain outgrowths of the expansion of chain store distribution. Prominent among these outgrowths is the buying exchange. The quantity discounts extended to the proprietors of chains have placed the individual retailer at a serious disadvantage and he has not been slow to recognize that his chance of survival would be much greater if he could get into a position to share in the quantity discount. One way to accomplish this result is to form a buying exchange. By such a method a group of retailers is able to buy in quantities and to demand the discount that properly accompanies such buying. The individual merchant operating alone cannot buy in quantities without endangering his very existence, but when he cooperates with other merchants the danger of overstocking is removed and the advantage of the larger discount remains. Hence the buying exchange.

Growth of the Buying Exchange

The buying exchange is not a very welcome addition to the mechanism of distribution, but how can the manufacturer refuse to extend it the quantity discount when he extends it to chains? He cannot consistently do so. If he did he would be bolstering up jobbers who are greatly in need of economic pressure to bring about greater efficiency on their part. If the buying exchange can do its own jobbing more economically than the jobber can do it, is the manufacturer to say that he will foster one form of organization that buys in quantities and not the other? To do so would be to subvert the very economic principles which should guide the manufacturer. He is seeking efficient channels to market. He cannot refuse one and accept another merely because of some difference in the form of organization. To do so would amount to a distinction on the basis of sentiment. The manufacturer has no recourse save the abandonment of the quantity discount in toto.

Influence of Chain on Manufacturers

It goes without saying that the coming of the jobbers. By cooperation between wholesalers and chain has greatly stimulated the use of quantity discounts by manufacturers. The use of this method of selling, places the manufacturer in line for business from every source without discrimination and

without the recognition of other than purely economic forces as the basis for business. Under the quantity discount all buyers face the manufacturer on the same basis—their buying power. The quantity discount therefore places the onus which it necessarily involves squarely where it belongs. It leaves the dealer the necessity of getting on that basis of operation which will bring results. It carries over the economics of manufacturing into the merchandising world. Thus one economic law is made to govern throughout rather than one economic principle governing in the field of production and another in the field of distribution. It places the issue squarely up to the manufacturing jobber, and it is said that ninety per cent of all jobbers are manufacturers to some extent. He can go on competing with the manufacturer, but he will not be favored with an inviolable jobber's discount which protects him as a jobber and leaves him to compete as a manufacturer. Thus the quantity discount comes right down to economic brass tacks. It hurts, but it must be healthful for all of that.

Application to the Electrical Industry

What is there in all of this for readers of the Journal of Electricity and Western Industry, particularly for those readers who are interested primarily in the distribution of electrical supplies of all sorts? Just this: that the great movements now going on in one field of distribution must eventually find their way into others. The business world is to some extent set off into compartments, but economic law is the enemy of all that rests on more tradition and it will eventually batter down the bulkheads that do not rest on a sound economic basis. While the discussion has rested upon material drawn from the grocery trade, the facts are none the less applicable to other lines. There are not fewer than 166 chains of department stores, general stores, five- and ten-cent stores, furniture, music, gas and electric appliance stores with close to five thousand units. Many of these stores handle electrical appliances and the 204 drug chains with more than 2,000 units are not wholly without electrical goods. While there are more than 16,000 electrical retail establishments, large quantities of electrical goods find their way to market through automobile supply shops, of which there are more than 46,000; through garages, of which there are more than 36,000; through hardware stores, of which there are more than 37,000, through drug stores, of which there are more than 35,000, and, finally, through department stores, of which there are above 2,000.

There are more than one million retail establishments of one kind and another in the United States. If the chain store merchandising principles are sound they will prosper and there is room for great expansion among these one million retail stores. Who can tell how far the movement will go? Only the independent retailers and their friends, the jobbers the old scheme of distribution may be made to function with new effectiveness, but if it does it will have to adopt some of the merchandising principles which have made the chain store what it is.

Sources From Which Labor May Be Recruited

By George H. De Kay

THE craftiness of a good lawyer, we are often told, depends not so much on his knowledge of the law as his knowledge of where to find it when he needs it—likewise with fishing and employing men.

It is all very well to be up to the minute on methods of selecting men, testing them and putting them through various forms of analyzation, but without the men to try this on, the knowledge is of small value.

An old negro once contrasted hunting and fishing by saying that in hunting you walk till your feet won't do their duty and you "gits nuthin'." But in fishing you know the fish are found in water and where the water is, so you "gits fish—mebbe."

Promiscuous or Systematic Searches

In the same manner there are two methods of locating men when needed. One is to go after them in a promiscuous manner with uncertain results, the other to look for them where they will most naturally be found. This can be done through a variety of mediums.

Large organizations such as railroads, oil companies and well known and established department stores have men constantly applying directly to them for employment. From this source they are able in many instances to fill vacancies with the men who have made application and who are skilled in the work to be done. Very often these men have worked for the company in other sections of the country and carry with them credentials showing their fitness for certain tasks. Likewise, department stores are constantly besieged with applicants who either can, or think they can, sell behind the counter or perform other duties.

In all organizations where inquiries are made daily regarding employment, adequate facilities should be provided to handle those applying. Even if a man's services are not needed he deserves courteous attention; if there is a possibility of his being used in the near future he should be given the privilege of filing an application—otherwise he should be frankly told that there is no opening for him. Places that make a practice of allowing a man to file an application simply to get rid of him will sooner or later find that when they really need help they will have difficulty in attracting the better class. There is more or less of a free masonry among the unemployed and opinions are quickly passed along regarding good or bad treatment encountered.

Nature of Help Determines Sources

The sources from which help may be secured vary according to the nature of the help needed. To hire laborers ready to leave at a moment's notice for any place, one has but to go into certain sections of any city where this class congregates. This is generally where the labor employment agencies are located. Sacramento has its First Street, San Fran-

cisco its Howard Street, others cities in the same manner. In these districts the employer can be sure of finding men ready and able to do anything from digging post holes to committing murder, as the police court records show. It is an interesting sight to see an employer call for from six to a dozen men, see them scatter to nearby "fleabite" hotels and reappear with a roll or bag containing their earthly possessions, ready to travel.

When men were hardest to find during the war period, many employment managers in large plants found it necessary to drag the lowest dens and hang-outs in the city slums and, with police assistance, round up the shirkers found there and enforce the "work or fight rule." Frequently both parts of the rule were acted out on the spot, the shirker putting up the fight and the police doing the work.

But these methods will not secure the skilled worker, or what is commonly known as the "white collar class."

The Newspaper an Aid to the Employer

When a newspaper is used to secure men, it is best to advertise in the Sunday editions as more men will then be reached. The advertisement should state fully and clearly the work to be done, age and other requirements. Advertisements stating the salary to be paid receive better response than those without this information. Men look with suspicion on any advertisement stating that the salary will be large or that the earnings will be in excess of anything they have ever received, for bitter experience has shown that such are generally "commission" jobs where the advertiser stands to do all the gaining and the employe gets the experience.

Another method of securing highly trained men is through technical or trade publications in their special field. Likewise in such magazines will often be found advertisements from men seeking a change or broader opportunity.

Reliable Employment Agencies Valuable

In every city are employment agencies, both public and private, which specialize in bringing employer and employe together. These agencies are operated either as state employment agencies giving a free service to all, as charitable organizations under city or religious supervision, as fraternal organizations, trade unions and private firms. The latter class depend upon fees charged the man for whom they secure a position, these fees running from a small sum to charges which seem entirely disproportionate to the value of the work secured. In some states such fee-charging agencies are regulated by state laws and are under the supervision of the State Labor Commission. They are required to pay a yearly license fee ranging from one hundred dollars in cities of the first class to as low as ten dollars in the smaller cities. In addition they must keep certain records showing the names and addresses of

those to whom employment service is given, fees charged, and the like. Reports covering these are made at stated intervals to the State Labor Commissioner who has power to enforce the laws governing the agencies. In some states the fees that such agencies are allowed to charge an applicant, when he has secured a position, are fixed by statute. Because of the necessity for charging fees, in order to maintain their business, these agencies are more and more coming to be looked upon with disfavor by employers, although in most cases they maintain a high ethical standard and endeavor to serve both employer and employe in a satisfactory and efficient manner.

Business colleges offer a fruitful field for securing young men and women who have been trained along clerical lines. Generally these graduates are without much commercial experience and are willing to start at a comparatively low salary until they can make good.

Veteran's Rehabilitation Bureau

The government is inaugurating a system for disabled veterans who have received rehabilitation training but who have not been able to secure experience in their new work. Such men are being placed in offices for a period of three months, during which time their salaries are paid by the government. These men are subject to the same rules of the company employing them as other employes and are on the same footing. If a man is discharged by the company, for sufficient cause, his training pay is stopped and he is then left to his own devices. By cooperating with the Veteran's Rehabilitation Bureau employers will be able, not only to aid deserving ex-service men, but also to cut down their own expenses for a time.

Most colleges maintain more or less elaborate placement offices through which employers may reach those either about to graduate or men finding it necessary to work while securing their education. Likewise public school officials are willing to cooperate with business men, especially nearing vacation or holiday periods when a large amount of extra unskilled help is needed.

Trade unions have offices through which men are cleared and from them, men skilled in trades may be located. Sometimes highly specialized men can be secured through such offices when they cannot otherwise be readily found.

Another source of securing help is through employes who can recommend men from their circle of acquaintances. In the past some companies have even paid a bonus for new employes brought in, but this feature has its drawbacks as it tends to bring in a floating class or to draw men from other nearby companies as well as unsettling conditions generally.

Religious, fraternal and charitable organizations frequently maintain more or less permanent forms of employment bureaus, but the chief fault found with them is that sufficient care is not taken in fulfilling the employer's requests. This is often due to the fact that the men in charge are either not trained in selecting employes; are not familiar with the em-

ployer and his requirements or are willing to send out anyone available and let them take a chance. Unless such work is handled in a careful, business-like manner, by trained men, the result will be that after one or two trials the employer places his calls where his instructions are regarded.

Location Is Factor in Employment

The geographical location of an industry will play an important part in securing and keeping employes. One cannery in California is located at a considerable distance from districts producing the fruits or vegetables it handles but operates almost the entire year and with the same crew. It has no near competitor. Therefore instead of having a crew that is liable to leave, as soon as some nearby cannery offers a slight increase, it can depend on the same workers the year around. Many have their own homes and form a very efficient group. By managing to retain the same set of workers the cannery has increased its production and lowered its costs enough to offset the difference it pays in shipping charges on its produce.

Office appliance companies maintain employment departments in connection with their sales departments. Although this work is carried on by them in order to help promote sales and as a part of their advertising policy, it often serves as the only method by which employers are able to secure employes trained in handling some of the more technical office appliances. Typewriter companies specialize in handling stenographers and typists, adding machine companies in their products and others in like manner.

Some of these companies even go so far as to maintain training schools where young men and women are given free training in handling such appliances as dictaphones, comptometers, filing systems, etc., and from which the employer can secure a high grade of clerical help. Such service is generally free to both the employer and the employe and helps connect their students with reliable firms.

"Don't Buy It if You Have It in Stock"

One source from which employes can be recruited and which is too often overlooked is from within the ranks of those already on the pay roll and ready for advancement. Where the employes have this policy to look forward to, they are more willing to stick to their jobs than where they see new men brought in from the outside and placed on work to which they have been hoping to be promoted.

A good many nationally known companies pick their new employes from the ranks of the new college graduates and men of like type who have had no actual experience. This raw material is sent to training schools operated by the company and given thorough schooling in every phase of the product before being used either in office or on road work. Such courses naturally are expensive and often mean that a thousand or more dollars is spent on the man before he can produce any material returns but the investment proves worth while, for from such material come the future executives of the company.

Eliminating the Waste in Industry

Shortcuts in Management and New Power Applications Which Have Been Adopted in Western Industrial Plants for Eliminating Waste, Increasing Production and Cutting the Cost of Manufacturing Processes

By LOUIS F. LEUREY
Industrial Electrical Engineer

Portable Power Plant Developed For Oil Well Pumping

A very economical arrangement, in the way of a portable power plant, for well pumping, has just been developed by G. C. LaMarsna of Taft, California. The new rig to a notable extent does away with the time formerly lost in changing over, in the oil fields, from steam to electric drive.

During the early history of the California oil fields practically all installations for pumping were steam or gas driven, using oil or gas from the wells as a primary fuel. Due to the pioneer efforts of such companies as the San Joaquin Light & Power Corp. and several large electrical apparatus manufacturing companies, electricity as a motive power was gradually introduced into these fields until at present it has to a very large extent replaced the use of steam engines as a prime mover.

The rig herewith described consists of the usual wound rotor type motor for heavy starting duty which is mounted on a frame made of I beams and angle iron, the whole thing self-contained and ready to operate for the final connection to the service lines.

In actual practice, when one of these rigs is ready to replace the steam engine, the engine is pulled back about 30 feet and a concrete foundation with anchor bolts is set for the motor frame. The motor and all wiring are tested in the shop and when slipped in place on the concrete foundation approximately three hours only are required to stop

the steam engine, shorten up the belt and start the motor on its permanent run.

In addition to the saving made in minimizing the shutdown, the rig is eminently fitted for rapid transportation to any point needed in the fields with the minimum cost of disconnection and re-installation.

Electricity is rapidly replacing steam in the oil fields as a means of pumping. In Kern county, California, there are

THIS DEPARTMENT

will be devoted to a discussion of the various problems of waste in industry as they affect western industrial plants. Readers are asked to aid in the solution of the most vital problems facing industry by sending in accounts and pictures of the various practices for combating waste, which have been adopted in plants with which they are familiar. It is only by thus co-operating with Mr. Leurey that the fullest service can be rendered. Space rates will be paid for all material which is published.

approximately 3,000 wells operating at the present time, over 900 of which are being pumped by electricity. Operators are unanimous in agreeing that electric drive is by far the most economical power, not only on account of reduced cost of operation, but also on account of the increase in production by reason of uniform speed of the motor, a feat

which cannot be accomplished with steam or gas engines.

That electric motors are increasing in popularity is demonstrated by a recent inspection which shows that the Standard Oil Company recently installed thirty motors in the Elk Hills district and is planning to put into operation thirty-five more in the near future. The Pan-American Petroleum Company has already begun installing thirty-five motors at its wells. The Honolulu Oil Company is electrifying its entire holdings.

Present indications are that within the next two years electricity will entirely replace steam in the California oil fields. Motor drive is already used to a large extent in drilling operations.

The freedom from fire hazard is another strong point in favor of electricity.

Insurance Against Destruction From Electrical Causes

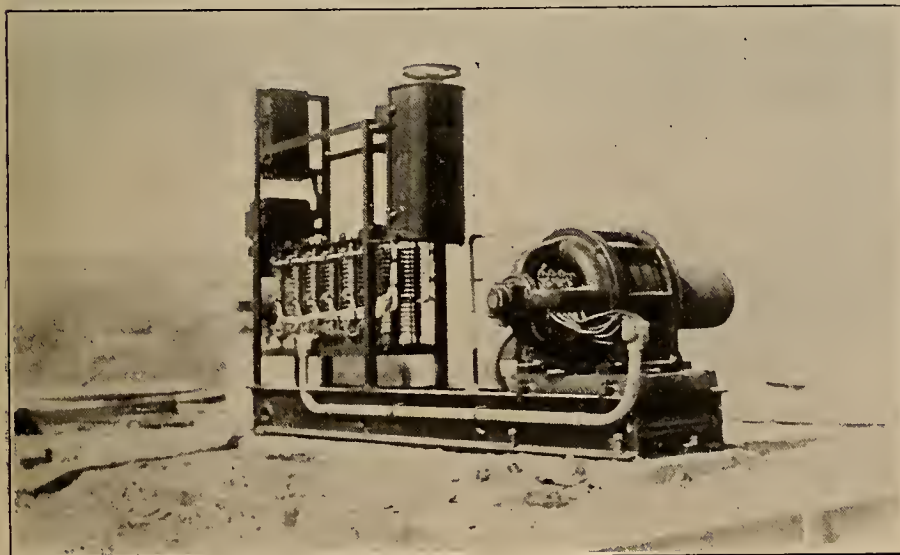
There has recently been instituted, by a number of insurance companies, quite an active campaign of writing policies covering electrical equipment in industrial plants against destruction from electrical causes, as against the standard policies which insure only against destruction from fire.

The rates in this new type of policy are not founded on any great amount of experience at present and are largely experimental in character, and undoubtedly after certain experience has been acquired, they will be materially changed in many respects. Broadly speaking, these policies cover all motors at a uniform rate per hp. per annum, and do not to any extent differentiate between classes or conditions.

It is very obvious even from a superficial study of the question that a number of things must be considered before the plant manager can equate the value of this insurance in his particular case. First, apparently no differential is made between motors installed in a plant of inherent cleanliness, such as a modern flour mill, as against a plant handling acids or gases where motors are subjected to more destructive operating conditions. No differential is established between motors operating in cool and well ventilated factories as against motors operating in steam heated rooms.

Second, no apparent differential has yet been established between new motors just installed in a new factory and motors which have been operating for a number of years in an old factory.

Third, there is apparently no differential between motors of the same hp.



The new portable rig developed by G. C. LaMarsna of Taft, California, which minimizes the time lost in changing from steam to electric drive. The power plant is assembled and tested in the shop and when the motor is fastened to its concrete base, the change can be made in three hours.

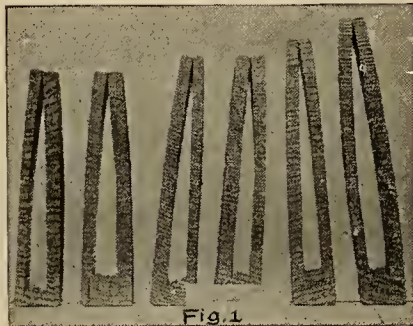
having different speeds and yet the high speed motors are inherently less costly than the slow speed motors of the same type.

Fourth, there is apparently no differential provided in plants where thoroughly qualified attendance is maintained at all hours as against those plants where no technical attendance is maintained.

Summing this up, it would seem that the greatest advantage of these policies, in their present form, would be to companies having a low order of maintenance and inherently severe conditions for electrical operation.

Improperly Dried Lumber May Be Salvaged by Use of Dry Kiln

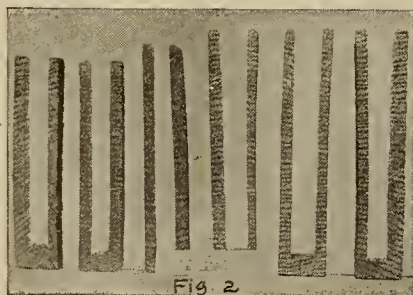
A large manufacturing concern whose specialty is electrical equipment purchased a quantity of quarter-sawn red oak which was to be used in one of its products. This lumber was what is commercially known as average air



Samples taken from the wood before kiln-drying, showing the distortion due to case-hardening.

dried—the drying being accomplished by stacking the lumber in the open for a certain period of time after it passed through the saw.

The manufacturing company, after finishing some of the electrical devices, found that they were not up to the necessary standard of quality and upon investigation, the trouble was traced to the poor condition of the air dried lumber. Samples cut from this lumber,



Samples taken from the same lumber after kiln-drying, showing how the distortion was overcome and that all stresses have been equalized.

as delivered from the mills, showed that it suffered from a form of distortion known as "case hardening," which is the result of over-drying of the surface of the wood without a corresponding drying out of the interior. These samples were cut in the shape of tuning forks. This, of course, produced unequal stress in the lumber, making it unfit for this special use.

After making certain laboratory tests to determine the condition, the remaining portion of the lumber stock was put into a high humidity dry kiln and after being put through this kiln for the proper amount of time, all of the case-hardened lumber was recovered in prime condition and it was used in the manufacturing process.

Manufacturers requiring lumber for specialty uses do not always realize the

lack of uniformity which must necessarily exist in air dried lumber. It is manifest that if two samples of lumber are left out for a certain period of time though at different seasons of the year, the conditions of wind, sun and weather will make the two samples entirely dissimilar in the results obtained. The use of high humidity kilns appears to be one practical system by which uniformity of quality can be secured.

Material Waste Prevented by Using Electricity

Advantages of Electricity as Heating Agent in Baking Industry and Porcelain Enamel Factory Offset Higher Cost

In considering the use of electrical energy in manufacturing plants for heating purposes it is too often dismissed with only a superficial examination into its merits and frequently its dismissal is based solely on the fact that its primary value as a heating medium does not compare favorably with the use of fuels like gas, oil, and coal. In its secondary advantages, however, it very often develops savings so great as to more than counteract its deficiency from a purely thermal point of view, and in the final analysis its relative economy can only be equated in terms of dollars and cents cost in the manufactured article of the company.

avowed policy was to install nothing but electrical ovens wherever these could be installed to operate at \$60 per month, stating that the advantage of the use of electricity was three-fold: first, due to the extreme cleanliness of the electrical method of production; secondly, due to the absolute safety from odor and explosion; and third, due to the perfection of heat control which not only reduced waste to a minimum but by the conservation of moisture actually produced more pounds of bread per barrel of flour than any of the other methods of baking.

Similar to this case, a large porcelain enamel company, manufacturing plumb-



A western bakery, showing a typical method used in installing an electric oven. The thermometers which register the heat of the oven are seen on the left of the machine. The control switches are located on the upper right hand corner of the oven.

In a recent electrical rate hearing before the Railroad Commission of California, a baking company, having a state-wide distribution of its products, asked for an equalization of electrical rates so that they could install baking ovens at equal cost in all parts of the state of California. In this hearing they gave testimony to the effect that they could operate one of their baking ovens with kerosene at \$15 per month; with city gas at \$30 per month; and that with electrical energy it would cost them \$60 per month.

In spite of the much higher cost of electrical energy, this company's

ing specialties, has found that in spite of the higher cost of electricity, used as a primary fuel, the perfection of control is such that they have reduced their spoilage approximately 25 per cent, besides securing a more uniform character to their entire output. As all rejections in this class of goods have to go through a hand-chiseling process for removing the old enamel, it can be readily appreciated that this very important saving would more than discount the increased fuel cost, while it further permitted a reduction in capital investment by securing more output per kiln.

Western Dealer, Jobber and Agent

Business building suggestions for the store—Distribution and warehousing methods—Advertising and sales promotion ideas

“Beneficial Election Ballot” as a Prospect Getter

Denver Electrical Dealer Sends Out Imitation Ballots Enabling Recipients to “Vote” for Possible Purchasers

By JOHN T. BARTLETT

A “Beneficial Election Ballot” is an excellent plan during the election season to obtain a good clean list of vacuum cleaner or other appliance prospects. The Denver Gas & Electric Light Co. sent out, with great success, many thousands of such ballots prior to the 1920 election. The general idea elaborated at that time by Frank Kivel, advertising manager, can be readily adapted to any locality and any concern. Any sort of an election will endow the plan with the peculiarly effective characteristic of timeliness. It need not be a presidential election. A city, county, district or state election will suffice.

Mr. Kivel got up a sheet 11 inches by 16 inches in imitation of a regular ballot. In large type at the top were the words “THE HOOVER PARTY.” There were also the words, “Beneficial Election Ballot,” and, within parentheses, the explanation, “As Herbert C. Hoover was not nominated at the Republican Convention in Chicago we are going to give all parties a chance to designate THE HOOVER in our fall campaign.”

The heading continued—

“HOW TO VOTE THIS TICKET
AND WIN A HOOVER

“Your friends all want a Hoover. Write their names in the left hand column, tear off and mail to Publicity Department, The Denver Gas & Electric Light Co., Room 208.

“For the first list mailed, from which we make the largest number of sales, we will give you absolutely free—

“ONE HOOVER ELECTION SUCTION
SWEEPER.

“The contest is open to any resident of Denver, not an employe of this company.”

The ballot which the Denver resident mailed to the company occupied the column at the left, and as it was perforated it could be readily detached. It was headed at the top—

“(Write Your Name Plainly)

Date.....

I,
Address
vote for the following persons who are interested in

THE HOOVER

Name
Address

Subjoined were blanks for the names and addresses of nine other prospects.

Spaces in the second and third columns were ruled off in imitation of a

regular ballot—six in one column, three in the third. The balance of the second and third columns were filled with advertising matter, as was the entire fourth column.

The spaces contained material advertising the Hoover. Election phraseology was used. For example—

“Vote For
THE HOOVER
It Beats
As It Sweeps
As It Cleans.”

or—

“Vote for THE HOOVER
It gets all the
Dirt Out of
Carpets and Rugs.”

or—

“The Hoover Party
Endorsed by
12,000
Hoover Users
in Denver.”

In another space, the reader was told that \$5 on time payments would be saved by purchasing a Hoover during the campaign. Another square had the recommendation, “Phone Main 4000 for a free demonstration in your home.”

Although the ballot seemed to say

little directly about the Hoover, it really said a great deal, through the medium of trenchant statements in election-time language.

The ballots were sent out in a long envelope with a “teaser” inscription, “Read This Ballot Carefully,” under a 1c. Denver permit. There was no return card or other information to reveal the identity of the sender. A “teaser” is advertising parlance for a curiosity-arouser. Once curiosity or other motive had impelled the recipient to open the envelope and glance at the enclosure, the novel nature of the latter could be depended on to secure at least a reading from most people.

Under post office regulations, prizes cannot be divided. If a first prize is offered, for example, and several tie for it, post office regulations compel the contest holder to give the full first prize to each of those participating in the tie. The Denver Gas & Electric Light Co. guarded against such a contingency arising, by stipulating, as a contest condition, that the list first mailed, from which the largest number of sales was made, would get the prize. The possibility of a tie is one that any holder of a similar contest should be careful to guard against in contest conditions.

The Denver Gas & Electric Light Co. got excellent results from the contest, both in numbers of prospects secured and in the “quality” of them. There is every reason to believe the general plan would be successful for others, using it to secure prospects names for sweeper, washer, ironer, or other appliances.



LARGEST RESIDENTIAL STORE IN DENVER

Denver's largest residential electrical supply house is owned and operated by E. C. Headrick, the chairman of the Electrical Cooperative League of the city. All kinds of fixtures and appliances are carried in stock by the store, which does a thriving business throughout the year.

How the Suburban Dealer Can Compete with the City Store

THE small town contractor is realizing that if he is to prevent his customers from purchasing their goods in the cities, he must have his store on the same high merchandising plane as those of his urban competitors. The Reid-Farley Electric Company, Fullerton, Cal., has incorporated the latest merchandising ideas into its new store. Note the electric sign, the large windows and the smart appearance of the interior of the store. Note the arrangement of the material on the shelves, the separate department for fixture display in the rear and the rest room furnished in wickerware.



Better Business is Yours if You Go and Get It

Electragists and Salesmen Must Be Sold on Their Product and On the Look-out For Possible Purchasers

By M. C. TURPIN

Westinghouse Electric and Manufacturing Company

One year ago the curve of business was just about at its lowest point and we were all correspondingly depressed. Now things are looking brighter, the curve is on a decided upward trend and we are feeling much better. We begin to feel that perhaps the end of the world has not yet arrived and possibly there is something worth living for after all. But let us take a sensible view of the situation and not sit back and wait for business to be brought to us as we did in the "peak load" times just after the war. Business is better, it is true, but your share and my share is going to depend just exactly on the amount of personal effort you and I put into it. Competition is keen and is going to be keener, therefore we must exert every effort to get our proportion of the business we know awaits us. One of the weakest points in the electrical retail business, it seems to me, is the lack of enthusiasm our own people have for electrical appliances, and the lack of systematic effort we put forth to sell them. A few instances that have recently come under my observation will serve to convey this idea better than a lengthy discourse.

In discussing the question of electric ranges with a salesman, whose duty it was to sell ranges along with other electrical supplies, he made this astonishing statement: "Now, just between you and me (of course I don't say this outside), the electric range has no advantages over a gas range, and besides it costs a great deal more." Is it any wonder that a salesman in such a frame of mind does not sell many electric ranges?

In a campaign recently staged in a small town in Pennsylvania, a solicitor called on a woman living over the store of a prominent electragist and sold her an iron and a toaster. After the sale was made, the salesman inquired why she had not purchased the articles from the store over which she lived. She replied, "I didn't know that he sold them." Such instances might be multiplied indefinitely but those related above show how necessary it is for us to "sell" our own associates and neighbors if we would do a real job of selling.

Many electrical retail merchants have assured themselves that their sales people and clerks have all of the electrical devices in their own homes that they can afford. Would it prove to be a paying investment to offer them a liberal employees' discount—cost price, if necessary—to get them to use, in their own homes, the devices they are supposed to sell? Surely a saleslady can talk far more convincingly of the merits of a particular vacuum cleaner if she used one in her own home.

Frequently, we overlook an excellent opportunity to make an easy sale outside of business hours. Recently when in a small western town waiting for a train, an electrical salesman was eating his dinner in a Greek restaurant (you know, nowadays when "Greek meets

Greek" they start a restaurant) he ordered some waffles and noticed the chef cooking them on a gas heated iron. The salesman asked for the proprietor, showed him a picture of an electric waffle iron and told him of its many advantages. The proprietor was duly impressed and the salesman left the restaurant with an order for three waffle irons which he turned over to the electrical retailer in the town. Undoubtedly the latter was one of those whose continuous complaint has been "Business is rotten," and yet here was a sale right under his nose but he couldn't detect it.

Business is here—plenty of it—if we will go out and get it, but don't let's sit around expecting it to be brought in to us on a silver platter.

Overhead vs. The Bended Arm

By JOE OSIER

A Chinese philosopher, who utilized the major portion of his time in herding a pig—

Peered through the brim of his rattan derby one day and pulled this one:

"With coarse food to eat, water to drink and the bended arm as a pillow, happiness may still exist."

I am almost tempted to believe, however, that this old philosopher was quoting some man of the electrical industry, in name only—

Who told the world and every member of his association that—

Overhead is a myth, invented solely to scare timid children and panicky old men.

Don't misunderstand me. I, too, think, in spite of the way this column reads, that happiness may be obtained and retained—

In spite of coarse food and water, but—

After hip-hipping for the 18th Amendment, reserving the tiger for Mr. Volstead—

I still insist that Overhead must be taken into consideration unless—

A sheriff's lock is urgently desired on the office door.

A bended arm will serve as a pillow in a pinch but, most of us,

I hereby depose—

Much prefer necking which has for its component parts, the proper amounts of feathers and linen.

Yea, fellow serfs!

Happiness may still exist no matter how humble the fare or mean the cot, still—

How much happier one can be parked behind savory viands or lying on a purple couch of ease—and—

These boons are within the reach of men of the trade—providing—

They look neither to the right nor left without first adding a liberal per cent for overhead—covering the cost of

the wear and tear on the stub pencil and—

The shine on the trouser seat, caused from riding boards in ante rooms.

Let Overhead be the verse—Overhead the chorus. May happy voices ring out with this refrain until the heads of every manufacturing concern—

And banking institution—

In this Great Commonwealth, grasp each man of the trade—

By his toil worn hand and call him—

Friend and brother bolsheviki.

In many sections of these United States today, especially in the territories where—

Jobs have been as scarce as hens' bi-cuspsids—

Since Bad Bill and his son the Clown Quince, quit cold—

Men of the industry have been found guilty of buying contracts.

In other words, they threw their hooks where there were no fish only to discover that—

They were giving a first class imitation of a sucker and, that the sack they were holding contained nothing but a—

Vast amount of emptiness.

They forgot for the moment that—

"There is a time to fish and a time to dry nets" and—

When they realized the truth of this wheeze, they came to know that—

They had transferred many "clanks,"

Of times referred to as dollars—

From the profit pocket to the pouch with the bottomless pit.

Some men, I have discovered, benefit from their experiences; others "hang tuff" until—

Their goods and chattels are sold under the hammer—then—

They resurrect their old clothes and renew their acquaintance with—

The boys who do the heavy lifting.

Oh, well! They still have the bended arm.

Northern Court Decides License Law for Electricians

According to an opinion rendered by Assistant Attorney-General O. R. Schumann at Olympia, the electricians' license law applies to independent contractors, and not to electricians who may be permanently employed to take care of a large concern's electrical work, or to an owner of property who employs an electrician by the day to wire his building, the owner furnishing all materials necessary. The rule of master and servant governs in determining whether license is required, the opinion says.

The bond provision of the law is to protect parties with whom electricians contract against damages for failure to comply with laws and ordinances, and against liens for labor and materials, and when the relations of master and servant occur, the former retaining full control, not only as to the final result of the work but as to the means whereby it is accomplished, the bond would seem to be a superfluous requirement, the opinion holds.

Activities of the West

A Business Man's Department Devoted to Events and Developments in Western Industrial Centers—Including News of Interest to Readers in Public Utility, Industrial and Trade Fields

Thirty Millions to Be Spent By Southern Pacific Company

Calling for an expenditure of nearly thirty million dollars, the Southern Pacific Company has an extensive program of betterment, construction, and addition for its Pacific System, during the remaining months of 1922. The policy of the company is to anticipate the needs of the shipping and traveling public, and the outlay which the company will make is to better the roadbed and rolling stock materially.

Two hundred and ninety miles of track will be relaid with 90-lb. rails, 2,518,000 new cross-ties will replace old ones, and 80,000 cu. yd. of ballast will be used to reinforce the roadbed. Many new sidings have been installed to handle the long 55-car freight trains which are now operating over the Sierra Nevada Mountains. The roadbed over the Tehachapi Mountains is to be double-tracked, the portions from Bakersfield to Sivert and from Tehachapi to Cameron are now under construction. Many tunnels are being enlarged and relined.

The Southern Pacific Company has ordered for delivery, or is making in its own shops, 63 new locomotives, which are to be ready for service during the present year. About nine thousand five hundred new cars of every description will have been added by the end of the year.

Two large electric turntables have been installed already and a third is being built. The two completed ones are at Dunsmuir and Ashland, while the one under construction is at Siskiyou. A turntable of similar dimensions is also to be built at San Luis Obispo.

Important plans for large expenditures for 1923 have already been made by Southern Pacific officials. From data available the program for the next year should be even more extensive than any so far.

Public Utilities Must Use Steel Poles in Salt Lake City

Further use of wooden poles by public utility companies is forbidden on paved streets and streets about to be paved, in Salt Lake City, under a recent decision of the city commission.

While there is no intention to compel a wholesale removal of wooden poles immediately, replacements must be made with steel poles.

The Beaverhead Transmission Company of Butte, Montana, recently filed articles of incorporation in that state. The company will transact a general light and power business in the state for a period of 40 years. The directors are: Walter J. Forsythe, Irving H. Bolitho and Elmer H. Mester.

Pit No. 1 Plant to Open September 30

Ninety-three thousand horsepower of electrical energy will be turned into the interconnected systems of California on September 30, when Pit No. One plant of the Pacific Gas and Electric Company is officially dedicated. Water was turned into the two-mile tunnel during the past two weeks and generating equipment was given a thorough tryout. The equipment is reported to be in perfect order.

Elaborate preparations are being made for the dedication of the plant, which will be attended by officials of the company and a number of notable guests.

For the present power will be transmitted at 165,000 volts although the lines were constructed for operation at 220,000 volts, a new world's record. It is expected that the higher voltage will be used early in 1923.

Valuation Engineers Needed By Bureau of Internal Revenue

To secure accurate valuations of many of the industries of the country, the technical staff of the Bureau of Internal Revenue at Washington is in need of valuation engineers in general mining, coal mining, oil and gas and the forest industry. The United States Civil Service Commission will receive applications until October 1. Duties involve estimation of quantities, market values, value of equipment, cost of development, etc. No written examination will be given. Salaries range from \$3,600 to \$4,800 per year.

To Erect Hydroelectric Plant at Buffalo Rapids

The Yellowstone Land, Power and Irrigation Company has been organized in Miles City, Montana, to develop a hydroelectric plant at the Buffalo Rapids in that state. The plant will be nine miles east of Miles City and will supply power to that city and a number of eastern Montana cities.

The Buffalo Rapids project provides for a low head development with installed capacity of 17,400 hp. comprising eight units of 2,190 hp. each. In addition to the municipal and industrial installations, power will be provided for the reclamation of 109,000 acres along the Yellowstone River.

Long-Bell Lumber Company Will Build Town on Columbia River

The Long-Bell Lumber Company of Kansas City has started the construction of an entirely new city along the Columbia River in the state of Washington, near the town of Kelso, to provide housing facilities for the company's 4,000 employees, who will work in the lumber mills to be erected at that point. The company owns 70,000 acres of fir timber, which will be manufactured into lumber, and the principal lumber activities of the company in the South will be transferred to Washington.

According to R. A. Long, president of the lumber company, the firm will build two huge mills on the Columbia River, which will have a combined capacity of 600,000,000 ft. of lumber annually. The first of these plants will be under way immediately.

The company will invite other industries to locate in the vicinity, and will not attempt to make it a one-industry town. The location is ideal for shipping lumber, with seven and one-half miles of water front on the Columbia River which can be reached by heavy freight liners from the Pacific Ocean, and five miles of frontage on the Cowlitz River. Three trunk line railroads are adjacent to the town.

Paper and Pulp Mill Is Under Construction at Denver

Construction of a \$500,000 paper mill has been started at Denver, Colorado. The mill, which is being built by the Myers Pulp and Paper Company, will consist of six buildings. A box factory, which will take the entire initial output of the paper mill is being built in conjunction with the plant. The box factory will consist of three units which will cost in the neighborhood of \$35,000 each.

Power contracts for the new mill have been let for a 10-year period. A thoroughly modern electrical installation will be made in the two new plants.

The officers and directors of the Myers Pulp and Paper Company are: Charles B. Myers of Chicago, president; A. E. Millington, vice-president; Wilbur F. Denious, secretary and treasurer; C. R. Rudy, sales manager and director, and Thomas F. Carey, director.

Plans for an expenditure of \$2,150,000 during the year for the Denver & Rio Grande Western railroad lines, have been announced by Joseph H. Young, receiver for the railroad. Two hundred and forty-seven miles of new rail will be laid to replace lighter steel. Improvements are also to be made to the motive power of the railroad.

Hasten Stockton Development by New Spur Track

Western Pacific Railroad Company Puts in Six Miles of Trackage
Enclosing Area of More Than Four Square Miles

Before the heavy rains of the winter set in, the Western Pacific Railroad Company hopes to have completed its new industrial trackage at Stockton, California. Contracts have been awarded to the Utah Construction Company and grading operations began August 28. The new trackage will be over six miles in length, and 85-lb. steel will be used throughout. Thomas L. Phillips, construction engineer, will have charge for the company.

Designated officially as the "North Channel Spur," this project is in reality a terminal proposition, which, it is estimated, can easily accommodate the industrial needs of a city of a quarter of a million people or more.

All of the franchises and rights have been obtained, and practically all of the

along the northern side of Stockton Channel. In this section the track will be from 100 to 200 feet from the water's edge, giving ample space for industries that require both rail and water facilities.

In planning this improvement, Colonel J. W. Williams, chief engineer of the Western Pacific Railroad, has followed the principle on which the San Jose Belt Line was constructed. In San Jose the Western Pacific's belt line encloses the city on the east, south and west, the length being nearly six miles. In Stockton the Western Pacific brings into use several square miles of new industrial land, now used largely for agricultural purposes, and makes available two miles of water front, at present not in use.

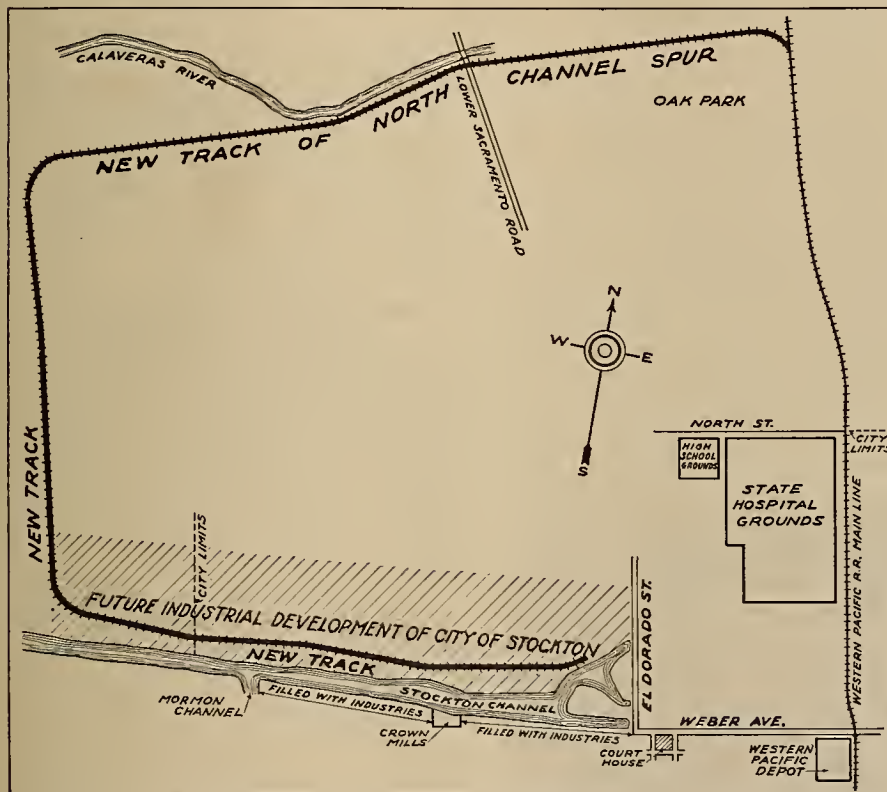


Chart showing the new \$300,000 industrial line being constructed by the Western Pacific Railroad Company to bring about the development of the area along the north bank of the Stockton Channel. The district designed for the future development of the city of Stockton is also shown.

right-of-way was bought before the contracts were awarded. The final obstacle to construction was passed when the State Railroad Commission recently granted the Western Pacific the right to cross the Lower Sacramento Road at grade.

The new industrial track leaves the main line of the Western Pacific at a point more than two miles north of the heart of Stockton. The track will be laid in a westerly direction for over two miles, at one point skirting the Calaveras River. Then the track will turn almost due south, for about two miles, continuing until it reaches the north side of the Stockton Channel. Then it turns easterly for about two miles,

Stockton's water front that is employed at present, includes the south side of Stockton Channel from its easterly terminus to the intersection with Mormon Channel. Some industries are located on Mormon Channel but the busy district is this south side of the Channel, which from a railroad standpoint, is served by the Southern Pacific, the Western Pacific and the Santa Fe railroad.

Most of the land enclosed by the North Channel Spur is vacant and is immediately available for industries. There is a residential quarter northwest of the court house—shown on the map—but the area occupied by homes is relatively small.

Senate Passes Tariff Amendment to Adopt Free Trade Zones

Establishment of foreign trade zones at a number of American ports is practically assured by the action of the Senate on August 16 in adopting an amendment to the tariff bill which would authorize their creation. To remove some of the objections voiced against the proposal, the Senate eliminated the authority permitting the establishment of manufacturing enterprises within the free zone.

Under the provisions of the amendment it will be possible to store, exhibit, break-up, repack, assemble, distribute, sort, refine, grade, clean, mix and otherwise manipulate foreign or domestic merchandise in an area where no compliance with the laws and regulations governing the entry of merchandise will be required.

At present, all goods landed in this country must pass through the custom house. If the goods are declared, ninety-nine per cent of the duty is refunded. However, the delay and red tape that is encountered, in addition to the one per cent duty, is very annoying. As a result of this many ships come to the United States in ballast, while, if the free ports are adopted, these vessels will bring foreign goods here to be trans-shipped along with American goods.

San Francisco has been suggested by the Tariff Commission as one of the ports best adapted to a trial of the free-zone plan.

Seattle Electric Week Plans Are Nearing Completion

Plans for Seattle's "Electric Week," September 22-29, are rapidly swinging into shape, and arrangements for the two model electric homes are practically completed. Burton R. Stare has been appointed chairman of the two model homes, with Walter E. Jones and Philip F. Apfel, his chief assistants. In addition there are approximately 300 supervisors, lecturers and attendants on the staff.

The finance committee for electrical week is completing arrangements to finance the whole undertaking in advance. Nothing is to be offered for sale, neither will there be solicitation of any kind in the homes, nor any advertising of the fixtures and appliances in use. Roy Worth is chairman of the finance committee, assisted by R. W. Cole, C. E. McCain, H. E. Bailey, P. A. Putraw, C. H. Birkel, J. R. Barry, Fred B. Lushington, John Hayes, H. A. Borning, B. R. Stare, Harry Martin, R. D. Constable and, W. W. What. W. M. Meacham is chairman of the appliance and fixture committee, assisted by W. E. Jones and P. J. Aaron, with others to be named.

The houses will be furnished by the Standard Furniture Company, who will cooperate with the electrical committee to make the furnishing harmonize with the electrical effect. House Manager Jones has appointed the following to supervise his home: L. R. Grant, Puget Sound Power & Light Co., James Maitland, Electrical Engineering Co., Fred Lushington, Lushington Electric Co., and C. D. Cunningham, Globe Electric Company.

Salt Lake Exposition Plans Nearing Completion

Committees for Rocky Mountain Electrical Display October 2 to 14 are Announced and Already Working

Plans are rapidly nearing completion for the Rocky Mountain Electrical Exposition to be held in Salt Lake City October 2 to 14. A complete organization of committees has been effected and indications are that the enterprise will be one of the most effective ever held in the West.

The personnel of these committees is as follows:

General Exposition Committee—A. M. Jackson, chairman; P. M. Parry (ex-officio chairman of the Advisory Committee of League), J. A. Kahn, W. A. Moser, E. H. Eardley and R. M. Bleak.

Officers—A. M. Jackson, manager; P. L. Goddard, secretary, and R. C. Nash, treasurer.

Exhibits Committee—H. M. Ferguson, chairman; Earl Morgan, decorations; Geo. R. Randall, booths, wiring and lighting; Geo. P. Traynor, concessions; J. A. Twelves, policing, cleaning and parking; A. J. Callaway, receiving goods; and P. L. Goddard, A. M. Jackson and L. B. Johnson, in charge of sale of space.

Features (sub-committee under Exhibits Committee)—P. P. Ashworth, chairman; E. Bachman, M. R. Davis, R. N. Emerson, C. R. Higson, L. R. Gamble, P. A. Jeanne, J. G. McCollom, Dr. Jos. F. Merrill, J. C. Paynter, H. T. Plumb, C. C. Pratt and Orin Tugman.

Finance Committee—W. S. Hodgson, chairman; R. H. Jones and C. B. Richmond.

Advertising and Publicity Committee—M. L. Cummings, Jr., chairman; P. L. Goddard and S. A. Stevens.

Arch and Searchlight Committee—C. R. Higson, chairman; E. L. Dee and H. S. Evans.

Music Committee—E. L. Dee and H. S. Evans.

Commercial Club and Chamber of Commerce, Salt Lake City—Harry L. Bracken, chairman; M. R. Ballard, M. B. Boothby, John H. Burrows, E. C. Coffin and J. H. Rayburn.

Cooperating with Engineering Organizations—H. T. Plumb.

Cooperating with Commercial Organizations—H. F. Dicke.

Exhibitors are arranging for booth space at a rapid rate, which indicates a very keen interest in the exposition from the viewpoint of the electrical interests, and assures a wonderful array

of intensely interesting and educational features.

A partial list of exhibitors follows:

Edison Lamp Works of General Electric Co.
United Electric Supply Co. of Salt Lake City
Utah Power & Light Co. of Salt Lake City
Eureka Vacuum Cleaner Co. of Detroit.
Capital Electric Co. of Salt Lake City
Intermountain Electric Co. of Salt Lake City
Dodge Bros. Electric Co. of Salt Lake City
Thor Electric Shop (Hurley Machine Co. of Chicago)

Locke Insulator Corporation of Victor, N. Y.
Mine & Smelter Supply Co. of Salt Lake City and Denver

B. & G. Electric Shop, of Salt Lake City
Salt Lake Electric Supply Co. of Salt Lake City
Woodrow Manufacturing Co. of Newton, Ia.

Eardley Electric Co. of Salt Lake City
Wasatch Electric Co. of Salt Lake City
Zion's Cooperative Mercantile Institution, of Salt Lake City

General Electric Co.
Consolidated Music Co. of Salt Lake City
Westinghouse Lamp Co.

H. G. Weeks Mfg. Co. of Hamilton, Ohio

Ohio Brass Co. of Mansfield, Ohio

Utah Cooper Co., of Salt Lake City

Coffield Washer Co. of Dayton, Ohio

Automatic Washer Co. of Newton, Ia.

Felt Electric Supply Co. of Salt Lake City

Western Electric Co.

American Wiremold Co. of Hartford, Conn.

Westinghouse Electric & Mfg. Co.

White Sewing Machine Co. of Cleveland

Pacific Electric Co. of San Francisco

Journal of Electricity and Western Industry

Meadows Mfg. Co. of Bloomington, Ill.

Edison Electric Appliance Co. of Chicago

Oregon Short Line Railroad Co. of Salt Lake City

Altorf Bros. Co. of Peoria, Ill.

Salt Lake Hardware Co. of Salt Lake City

Western Union Telegraph Co.

Strevel—Paterson Hardware Co. of Salt Lake City

Landers, Frary & Clark Co. of San Francisco

One Minute Washer Co. of Newton, Ia.

Cullen Mfg. Co. of Salt Lake City

An elaborate publicity program, with the view of securing an attendance at the Exposition which will surpass all records for such an event in the West,

is being inaugurated through newspaper advertising, billboards, window cards, window displays, mailing "stuffers," dodgers, banners, circular letters, etc., not only in the territory immediately surrounding Salt Lake City, but throughout the Intermountain section. This campaign, together with the fact that the semi-annual Mormon conference and the Utah State Fair will take place in Salt Lake City during part of



A. M. Jackson, Manager of the Exposition

the same period as the Exposition, will undoubtedly produce wonderful results as far as attendance is concerned.

Final plans for the construction of the "archway of jewels" have been approved, and work on this structure is now under way. This archway will, in itself, be one of the real spectacular features of the Exposition.

Application to Develop Power in Eastern California

Application for a comprehensive irrigation and power project in Placer and Eldorado counties, California, has been filed with the Federal Power Commission at Washington by the American River Power & Water Company. The project includes the construction of a diversion dam in the Rubicon River, from which the water will be led by canal and tunnel to a large reservoir to be built at French Meadow, in the middle fork of the American River. A canal and tunnel will carry the water from this dam to a power house on the north fork of the river. Water will also be brought to this power house from the north fork of the river, by means of another diversion dam, tunnel and canal.

From this power house the water will be conveyed, by means of canals and tunnels, to three other power houses on the north fork and main stream of the American River. The stored water after passing through the last power house will be used to irrigate lands below Auburn, in Placer and Sacramento counties. The company estimates that 188,000 hp. will be developed.

Progress is being made in boring into Kilauea crater in the Hawaiian Islands, in order to secure heat and power from the volcano. When the men boring into the lava had reached a longitudinal distance of 46 ft. a temperature of 150 degrees F. was recorded. On going 19 ft. deeper no perceptible increase in temperature was found. This upsets the theory that the temperature would increase at the rate of two degrees F. with each foot that the hole was sunk.



Members and officers of the general committee in charge of the Rocky Mountain Electrical Exposition to be held in Salt Lake City, October 2 to 14. Top row, left to right: R. C. Nash, auditor, Capital Electric Co., P. M. Parry, commercial manager, Utah Power & Light Co., R. M. Bleak, superintendent lighting and appliance sales, Utah Power & Light Co., C. R. Higson, engineering department, Utah Power & Light Co., W. S. Hodgson, auditor, Utah Power & Light Co., H. L. Bracken, president H. L. Bracken Co. Bottom row, left to right: H. M. Ferguson, manager Salt Lake Division, Utah Power & Light Co., W. A. Moser, district manager, Westinghouse Electric & Manufacturing Co., P. L. Goddard, executive secretary, Rocky Mountain Electrical Cooperative League, M. L. Cummings, Jr., commercial department, Utah Power & Light Co., E. H. Eardley, president Eardley Electric Co., J. A. Kahn, president Capital Electric Co.

Salt Lake Railroad to Build New Terminal Facilities

Actual construction of the passenger depot of the Salt Lake Terminal Company in Salt Lake City, at the southwest corner of West Temple and South Temple streets, will commence as soon as the necessary changes can be made in the drawings and contracts for the work let. The structure will cost approximately \$200,000.

This announcement has been made by W. C. Orem, president and general manager of the Salt Lake & Utah Railroad, which company, together with the Bamberger Electric Railroad, forms the Terminal company. Sale of certain bonds upon which work on the building has been pending, has resulted in the above announcement.

The building will be two stories above the ground with a frontage of 194 ft. on West Temple street and ninety-two ft. on South Temple. It has been decided to construct the building so that six or eight stories may be added.

Young and Hanson, of Salt Lake City, are the architects.

The basement floor of the building will be occupied by express and baggage rooms, with ample rooms for trainmen and other employees. The first floor will be arranged for waiting rooms, ticket offices and various business establishments. The second floor will be given over to offices of the two electric lines.

Construction work is expected to be completed not later than next spring.

Association Formed by Vancouver Small Residence Wiremen

After months of effort on the part of the fieldman of the Electrical Service League, the small residence wiremen of Vancouver have organized the Electrical Contractors' Association of British Columbia. This organization is entirely independent of any existing electrical contractors' association, but is formed for the specific purpose of bettering conditions among the residence wiremen.

The following officers were elected August 1, to serve for a period of six months: President, A. M. Buck; secretary-treasurer, Jas. Holt; executive committee, H. B. Steeves, M. J. Johnson of Johnson Electric, and A. P. Safford of Crosby and Safford.

Two Tuesday evenings each month are set aside for meetings, which are held in the rooms of the National Association.

L. A. Gas & Electric Corporation Erects Three Gas Generators

Taxed to capacity by an increase of 126 per cent over gas sales for 1915, the Los Angeles Gas and Electric Corporation is installing a battery of three gas generating sets to take care of the peak load that is expected this winter. Both gas and electric sales have increased over 1915, the year taken as a base. Sales of gas have increased more than the number of meters in a ratio of about three to one.

The new apparatus is to consist of three gas generating sets, each having two shells 27 ft. in diameter, by 45 ft. high, with a normal rated capacity of 7,000,000 cu. ft. every 24 hours. The

generators will be the largest of their type in the world and will be fitted with all labor and money-saving devices. One waste heat boiler is being installed, thereby making use of the heat used in blasting. This is the first time that these boilers have been used with oil-gas-generating apparatus. Water is being developed by means of an underground gallery.

Vancouver Calls for Tenders on Electric Dock Equipment

The Harbor Board of Vancouver has just called for bids for the supply and installation of complete electric equipment and cargo lifting plant for the new \$2,000,000 Ballantyne Pier, being erected in that city. The equipment specified by A. D. Swan, harbor engineer of Montreal consulting engineer for the Harbor Board, includes semi-portable electric cranes, electric freight elevators, electric escalators, electric canstans, tractors and trailers.

This electrically operated equipment, together with an elaborate lighting system, will allow cargo to be handled from ship to dock, or from dock to ship, at any hour of the day or night and will give Vancouver the best equipped dock on the North Pacific Coast.

It is roughly estimated that this equipment will cost in the neighborhood of \$250,000. Bids will be received up till noon of Monday, October 2, 1922.

Reduction of Municipal Lighting Rates For Seattle By 1923

According to the superintendent of lighting, J. D. Ross, Seattle municipal lighting rates will probably be reduced early in 1923. The department is working on a revision of rates and the reduction will probably be accomplished early next year.

The city reduced its industrial rates in May about 25 per cent, and Mr. Ross states that instead of showing a temporary loss as anticipated, the change has resulted in a gain. In April the industrial power furnished was 1,747,059 kilowatt-hours, and the receipts \$37,165.80. In May the reduction was made, and the June report shows 2,004,834 kilowatt-hours furnished, with receipts of \$37,878.35, or virtually \$700 increase.

With the cost of fuel oil now at \$1.30 a barrel, and with the first unit of the Skagit plant in prospect for the last of next year, or the first of 1924, the light department is preparing to cut off the first 5,000 kw. of power now taken from the Puget Sound Light & Power Company, under the street railway contract.

Exhibits of the Great Western Power Company filed before the California Railroad Commission in a recent rate hearing show a valuation of \$69,516,725 for its total operative properties. This amount included the entire cost of the big Caribou development which was completed in May, 1921. Other items that made up the total included lands, hydroelectric plants, transmission and distribution systems, substations, material and supplies, etc., but did not include lands and other properties, which, though owned by the company, are not considered operative.

Experiments With a New Design of Impulse Wheel

Experiments made recently at the Philadelphia plant of the William Cramp & Sons Ship & Engine Building Company by the I. P. Morris department and their associate, the Pelton Water Wheel Company, are said to have demonstrated the success of water wheels built according to a design radically different from anything heretofore on the market. Small wheels of the new type for test purposes have shown higher efficiencies than can be expected from impulse wheels of ordinary design and are said to be efficient over a wide range of heads, including those in the neighborhood of 800 to 1,000 ft. where the relative merits of reaction and impulse types are frequently in dispute.

The new design follows the principle of the impulse wheel, but instead of a jet or jets tangentially disposed to the periphery of the runner, the flow in the new design is normal to the runner plane. Further, instead of one or more separate jets to which the buckets are subjected during only part of a revolution, the new design applies the spouting water to all the buckets simultaneously and continuously around the entire periphery of the wheel, that is, the water reaches the runner in the form of an annular ring whose diameter is equal to the diameter of the runner. The flow in this annular ring contains both tangential and axial components.

Regulation is effected by an annular plunger moving axially to close the orifice of the nozzle. A section through the annular nozzle as taken in a plane containing the turbine axis shows a contracting water passage somewhat similar in form to a section through the ordinary needle nozzle. A point of difference, of course, is represented by the tangential velocity components about the axis of the jet which are not present in the jet from the ordinary needle nozzle. Air is freely admitted to both the inner and outer surfaces of the jet and the water does not completely fill the runner buckets, but is in contact with only one surface of each bucket, that is, the action is that of a true impulse turbine.

The advantage of the impulse turbine is therefore claimed for the new design in that changes of pressure through the runner are avoided and there are no forced changes of the relative velocity of the water with respect to the buckets as are required in a reaction turbine where the stream must completely fill the area of the conduit at all points. Therefore, the risk of cavitation due to sudden variations in pressure within the bucket is eliminated, and there is no leakage loss due to poorly fitted or worn seal rings.

Runners for wheels of this design can be built of extremely small diameters, it is claimed, as compared to impulse wheels of ordinary design, and units of this type are to be put on the market in commercial sizes as soon as the present experiments are completed and details of construction in larger sizes have been worked out. Two types of the new design are being studied; one of these was developed by H. Birchard Taylor and the other by Lewis F. Moody.

Investment Bankers Are to Make Visit to Kerckhoff Dam

When the members of the Investment Bankers Association of America reach California early next month enroute to the eleventh annual convention to be held at Del Monte, one of the first long stops of the six special trains conveying them will be at Fresno, from which a side trip will be made to Kerckhoff Dam. The visitors will be the guests of the San Joaquin Light and Power Company at luncheon.

This side trip was planned to give the eastern bankers an opportunity to see at first hand the physical resources of one of California's great hydroelectric power projects. California and the West occupy so outstanding a place in the hydroelectric field, developed and potential, that the convention committee of the California group determined that the membership of the association, representing men who handle a billion and a half dollars worth of investment securities annually, should see for themselves what has been done with the proceeds of California public utility bond issues which they have helped to market.

The irrigated districts around Fresno will also be viewed. On the itinerary are Sacramento, Los Angeles, and Santa Barbara, with a day in San Francisco after the close of the convention.

The committee in charge of the convention comprises Cyrus Peirce, of Cyrus Peirce & Company, chairman; Robert E. Hunter, of Hunter, Dulin & Co.; J. E. Jardine, of Wm. R. Staats Co.; LeRoy T. Ryone, of Ryone & Co.; G. C. Stephens, of Stephens & Co.; R. H. Moulton, of R. H. Moulton & Co.; and Dean G. Witter, of Blyth, Witter & Co.

Association Representatives Stir Interest in Cooperation

Cooperation in the electrical industry in British Columbia has taken on an added impetus since the visit of Lawrence W. Davis, representative of the National Association of Electrical Contractors and Dealers, and Kenneth A. McIntyre, Canadian representative of the Society for Electrical Development, Inc., of New York.

Arriving in Vancouver August 14, they were the guests of the Advisory Council of the Electrical Service League of British Columbia. Monday evening they addressed the representatives of every branch of the industry at a dinner given under the auspices of the Electrical Service League of British Columbia. Mr. McIntyre spoke upon "The Value of an Electric Home to the Electrical Industry" and Mr. Davis upon "Cooperative Associations in the Electrical Industry." Tuesday evening Mr. Davis addressed a joint meeting of the members of the National Association of Electrical Contractors and Dealers and members of the small non-association electrical contractors' club.

The direct result of these meetings in Vancouver has been to increase membership in the National Association of Electrical Contractors and Dealers' Association and to gain the more united support of the contractors for the Electrical Service League of British Columbia.

Wednesday Mr. McIntyre and Mr. Davis, with Sid Smith, assistant district manager of the Canadian General Electric, W. W. Fraser, past president of the local branch of the National Association of Electrical Contractors and Dealers' Association, and Rey E. Chatfield, secretary-manager of the Electrical Service League of British Columbia, went to Victoria and there addressed the members of the Electrical Association of Victoria, B. C., at a dinner held in the Dominion Hotel.

Previous to this visit of Mr. Davis and Mr. McIntyre to Victoria, the contractors of that city could not be interested in association work. At the conclusion of the dinner every contractor present became a member of the National Association. In addition the central station took out an association membership in the National Association.

Will Install World's Largest High Tension Switches

The largest high tension electric switches ever built are now being installed by the Pacific Gas and Electric Company in its Pit River hydroelectric development. These switches, six in number, weigh upwards of thirty tons each and are nearly eighteen feet high. Approximately 2,000 gallons of oil, used as an insulating medium, are required for each switch.

The switches were specially built by the Westinghouse Electric and Manufacturing Company at East Pittsburgh, Pa., and are being installed at both ends of the 220,000-volt line, now under construction by the P. G. & E. Co. through the upper Sacramento Valley. Three switches will be placed in service at Pit No. 1 power house in Shasta county, and three at the company's Vaca Substation, near Dixon.

While the switches are designed to operate on a 220,000-volt system, they have been subjected to a test of 350,000 volts, over fifty per cent higher than the normal operating voltage. In addition to being the largest in actual size, the switches are also constructed to break the highest voltage current ever utilized in a commercial way.

The Tacoma Electrical Club, Tacoma, recently held a meeting attended by more than 50 electrical contractors, at which time methods of efficiency were explained. Kenneth McIntyre of Toronto, representative of the Society for Electrical Development, Inc., and Lawrence W. Davis of New York, special representative of the National Association of Electrical Contractors and Dealers, were the speakers.

A franchise providing for the furnishing of light and power to the city of Veronia, Oregon, was recently presented to the city council of the city, by George J. Burdick, who represented a company desirous of installing a small hydroelectric plant on Rock Creek. The company submitting the franchise plans to build a dam on Rock Creek about nine miles above Veronia, where 1,500 hp. can be developed. The cost of construction, it is estimated, will be approximately \$80,000.

Books and Bulletins

PRINCIPLES OF ELECTRICAL ENGINEERING

By WILLIAM H. TIMBLE and VANNIE BUSH, associate professors of electrical engineering, Massachusetts Institute of Technology. 6 by 8 in., 513 pp. 241 charts, diagrams and illustrations. \$4. John Wiley & Sons, Inc., New York.

Aiming to provide a first course in the subject in a really understandable form, this book presents the basic principles upon which modern electrical engineering rests. In furtherance of this purpose, many problems and examples from current engineering practice are introduced. The book has five special features which recommend it. The subject of the magnetic circuit has been particularly stressed. The modern electron theory has been freely used as a basis of explanation. The subjects of thermionic emission, conduction through gases, electrolytic conduction and certain high frequency phenomena have been introduced. The subject of the behavior of dielectrics has been approached in a new manner and five hundred live problems have been introduced for illustration. All of these make the book valuable as a text. It is written primarily for students of college grade and presumes a knowledge of calculus and physics.

New Rating Book Published

A new edition of Moody's Public Utility Rating Book has just come off the press. The new issue contains the latest financial statements and earnings reports of public service enterprises of every kind in this country and Canada as well as the prominent foreign concerns.

Moody's Public Utility Rating Book is a descriptive manual on corporations and securities published for investors. Analyses of securities published for investors. Analyses of securities are presented and a definite investment rating is assigned to every bond and stock issue.

For many years Moody's Rating Books were used mainly by banks, financial houses and investors, but recently the Public Utility volume has come into general use upon the part of officers and managers of electric light and power, traction, gas, water, telephone and telegraph companies.

The Public Utility Rating Book is one of a series of four volumes, the other sections covering Industrial, Government and Municipal securities, and Railroads. The Industrial Book for 1922 was issued early this summer, while the Government and Municipal and Railroad Books will be out within the next few weeks. These books are sold by Moody's Investors Service, 35 Nassau Street, New York, at \$20 each or \$80 for the set of four volumes, including monthly supplements.

A favorable report has been made by the engineers of the Arizona mining companies on the proposed power development by the Salt River Valley Water Users' Association below Roosevelt dam.

Meetings of Interest to Western Men

Successful Dinner Sponsored by S. F. Electrical Industry

Characterized as the most successful meeting ever sponsored by the electrical industry of San Francisco, the first of a series of "get-together" dinners to be held throughout the coming winter was held at the San Francisco Commercial Club on September 7. Lawrence W. Davis, special representative of the National Association of Electrical Contractors and Dealers, and Kenneth McIntyre, field representative of the Society for Electrical Development, Inc., were the guests of honor.

Charles W. Helser, president of the California Development Association, one of the speakers of the evening, delivered an eloquent address in which he roundly condemned the proposed California Water and Power Act which will come before the California voters in the November election. Before the meeting adjourned a resolution was passed voicing disapproval of the proposed measure.

The speakers of the evening consisted of Mr. Davis and Mr. McIntyre, both of whom spoke on the functions of the organizations which they represent, Mr. Helser, and Earl Fisher, chairman of the advisory committee of the California Electrical Cooperative Campaign, who outlined the work of the campaign for the coming year. John A. Britton, first vice-president and general manager of the Pacific Gas and Electric Company, acted as toastmaster.

The dinner was attended by approximately 300 members of the electrical fraternity of San Francisco and Oakland.

Dexter S. Kimball Speaks Before Engineers of Ogden

Dexter S. Kimball, dean of engineering at Cornell University and president of the American Society of Mechanical Engineers, was the principal speaker before the Ogden chapter of the American Association of Engineers at the Weber Club August 7. Members of the University Club of Ogden also attended the meeting and banquet.

President Kimball addressed the engineers on the "Industrial Situation."

In his address he emphasized the fact that a change must be made in production and distribution methods immediately if the country is to continue its growth. He declared that the United States can produce but cannot distribute in the proper manner.

Engineers, he said, have built up an industrial machine but that no one can operate it.

Electrical Men to Venture Into Idaho Wilds in Game Quest

Carrying out their policy of an annual expedition to the wilds, seven members of the electrical industry on the Pacific Coast will start on a hunting and fishing trip along the Salmon River in Idaho, the latter part of this month. A boat is being built for the hunters and fishers at Salmon City and the party plans to float down the Salmon as far as Lewiston.

The men who will make the trip are: H. E. Sanderson, of the Bryant Electric Company; C. R. Bach, of the Manhattan Electric Supply Company, both of San Francisco; F. N. Averill and C. M. Will, of Fobes Supply Company, Portland; O. B. Stubbs and S. W. Peterson, of the Stubbs Electric Company, Portland, and R. W. Littler of the West Coast Engineering Company, also of Portland.

The members of the party have announced that orders for wild meat will be received at the headquarters in Portland and orders will be filled in the order they are received.

Industrial Electric Heating to Be Discussed by Society

Two of the technical sessions of the American Electrochemical Society, to be held in Montreal, September 21 to 23, will be devoted to a symposium on Industrial Electric Heating. There will be papers on the proper selection and properties of resistor materials, methods of handling materials in electric furnaces, and a discussion of the proper design of furnaces for industrial heating.

Civil Engineers to Hold National Meeting in San Francisco

Hydroelectric development will be the subject of the coming meeting of the American Society of Civil Engineers, which will be held at San Francisco during the first week in October, and which will be attended by prominent members of the profession from all parts of the country.

Special interest attaches to this meeting because it marks the abandonment by the society of its time-honored policy of holding but two general meetings during the year, the "annual meeting" held in January at the New York headquarters, and the "annual convention," largely social, at some selected point. Of the fifty-one conventions that have been held, up to the present time, only four were at Pacific Coast cities, two in San Francisco, in 1896 and 1915, and one each at Seattle and Portland, in 1912 and 1920 respectively.

Beginning with the present year, however, the society has adopted a plan similar to that followed by the other national engineering societies, and is holding four meetings per year, at various points throughout the country. That San Francisco should be selected as the place for one of the first meetings under the new plan is significant of the growing country-wide recognition of the importance of the Pacific Coast.

All sessions will be held at the Palace Hotel. Preliminary meetings of the board of direction of the society will be held Monday and Tuesday, October 2 and 3. The general meeting of the entire society will be formally opened Wednesday morning, John A. Britton delivering the address of welcome. Technical sessions will be held Wednesday morning and evening and Thursday morning. Among the prominent visitors who will deliver addresses are A. P. Davis, director of the U. S. Reclamation Service and former president of the society, who will discuss the Boulder Canyon Project, and F. E. Matthes, of the U. S. Geological Survey, who will talk on surveying and map making by airplane.

Wednesday and Thursday afternoons will be devoted to excursions to nearby points of interest. Thursday evening there will be a dinner and smoker, at which Professor Charles D. Marx, head of the department of civil engineering at Stanford University, will preside.

The remainder of the week will be devoted to an excursion to Hetch Hetchy, leaving San Francisco Thursday evening at the conclusion of the smoker. The party will arrive in the mountains the following morning and will spend Friday and Saturday in going over the various parts of the Hetch Hetchy work, visiting also the Don Pedro dam, now being built by the Modesto and Turlock irrigation districts.

The Electric Club of Seattle recently elected the following officers: W. E. Jones of the Economy Fuse and Manufacturing Company, president, to succeed J. J. Agutter of the J. J. Agutter Electric Company; George Reininger, Globe Electric Company, vice-president; Rush McCargar, Rush McCargar Electric Company, secretary, and George R. Cooley of the Cooley Electric Company, treasurer.

COMING EVENTS

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS

Annual Meeting—San Francisco, Calif.—September 23-25, 1922

NATIONAL ASSOCIATION OF RAILWAY AND UTILITY COMMISSIONERS

Annual Convention—Detroit, Mich.—September 26-30, 1922

AMERICAN SOCIETY OF CIVIL ENGINEERS

Annual Meeting—San Francisco, Calif.—October 4-8, 1922

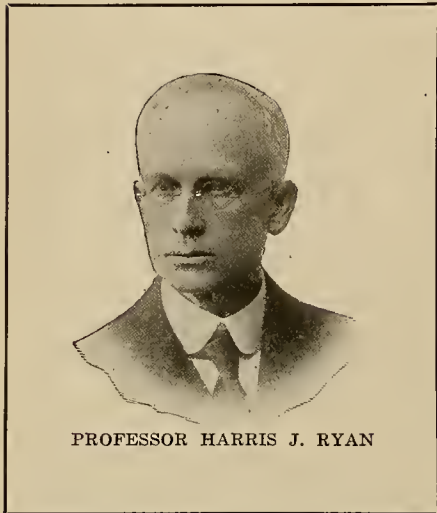
INVESTMENT BANKERS ASSOCIATION OF AMERICA

Annual Convention—Del Monte—October 7-11, 1922

NATIONAL ASSOCIATION OF ELECTRICAL CONTRACTORS AND DEALERS

Annual Convention—Cincinnati, Ohio—October 9-14, 1922

Professor Harris J. Ryan, head of the department of electrical engineering, Leland Stanford, Jr., University, is being advocated for the post of president of the American Institute of Electrical Engineers in recognition of his brilliant attainments in the engineering field. Professor Ryan for many years occupied the chair of electrical engineering at Cornell University, Ithaca,



PROFESSOR HARRIS J. RYAN

N. Y. In his early days important patents were awarded to him, notably in conjunction with M. E. Thompson for the Thompson-Ryan equipment and for repulsion and interpole motors. Since he has been at Stanford University, Professor Ryan has acted in a consulting capacity for many of the large hydroelectric systems of the Pacific Coast. He has also done important research work in connection with high-tension insulation. During the Panama-Pacific International Exposition in San Francisco in 1915, he served as honorary vice-president of the A.I.E.E. on the Pacific Coast.

Markham Cheever, chief engineer and general superintendent of the Utah Light and Power Company, has been named chairman of the Water Power Development Committee of the Salt Lake City Commercial Club and Chamber of Commerce. Other members of the committee are R. R. Lyman, E. H. Eardley, Lafayette Hanchett, H. B. Waters and A. M. Jackson.

E. W. Rice, honorary chairman of the board of directors of the General Electric Company, with headquarters at Schenectady, is a recent San Francisco visitor.

Calvin W. Rice, secretary of the American Society of Mechanical Engineers, is the official representative of that organization to the International Exposition to be held at Rio de Janeiro this fall. Mr. Rice goes to the exposition as honorary vice-president of the society.

R. H. Ballard, vice-president and general manager of the Southern California Edison Company, John A. Britton, vice-president and general manager of the Pacific Gas & Electric Company and William H. McGrath, vice-president of the Puget Sound Power Light Company, are the western members on the public policy of the National Electric Light Association which has just been announced by President Frank W. Smith.

Personals

James D. Blackwell, Seattle, president of the Northwest Society of Engineers, has been appointed city engineer of Seattle, to replace A. H. Dimock, who has been in office since 1911. Mr. Blackwell came to Seattle in 1899 for Stone & Webster interests, and aided in laying out a part of the city railway system. Since 1905, he has been associated with H. D. Hanford in general engineering practice.

C. E. Skinner, assistant director of manufacturing of the Westinghouse Electric & Manufacturing Company, during a short stay in San Francisco in connection with an inspection trip of the West, gave an interesting talk on the subject of "The National and International Engineering Standards Committee" before the Engineers' Club of that city. C. E. Heise, district manager for the Westinghouse company, acted as chairman of the meeting.

W. L. Johnson, formerly with the Southern California Edison Company and the East Pittsburgh Works of the Westinghouse Electric & Manufacturing Company, is now connected with the Los Angeles office of the Westinghouse Company in the capacity of automatic control specialist.

J. G. G. Kerry, hydroelectric engineer of Toronto, Canada, has been appointed consulting engineer for the city of Vancouver in connection with the establishment of a municipal hydroelectric plant in that city. The council has already secured options on a number of prospective water power sites in that vicinity and it will be Mr. Kerry's first duty to investigate these sites with a view of reporting on the one which is best suited for the city's purposes.

Bernard H. Linden, assistant radio inspector in the California district, has gone to Seattle to take charge of the northwestern office during the absence of O. R. Refern, inspector in that district, who is making an inspection trip throughout Oregon and Washington.

Kempster B. Miller, one of the principal stockholders of the Bend Water, Light and Power Company of Bend, Ore., is transferring his headquarters from the Middle West to Bend in order to be in closer touch with the activities of the company.

E. C. La Rue of the water resources branch of the U. S. Geological Survey, A. P. Davis, director of the United States Reclamation Service, R. E. Caldwell, state engineer of Utah, Dr. John A. Widtsoe, consulting engineer and Clarence C. Stetson, secretary of the Colorado River Commission, recently completed a trip by boat through 120 miles of the Colorado River Canyon between Halls Crossing and Lee's Ferry. The party inspected the entire 120 miles of canyon with a view of determining upon the possible damsites on that section of the Colorado.

H. C. George, oil recovery engineer of the San Francisco office of the United States Bureau of Mines, has returned to San Francisco from a two months' trip to Alaska.

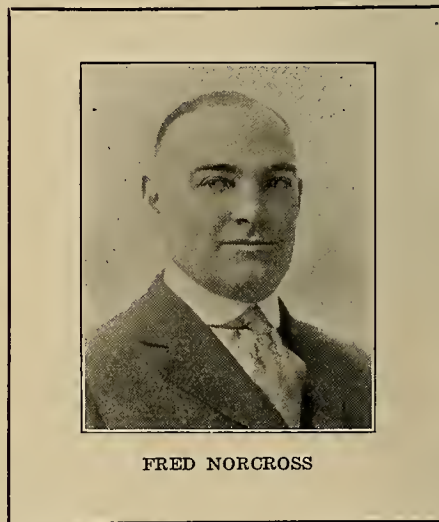
J. G. Miles has been appointed manager of the central station division of the Seattle office of the Westinghouse Electric and Manufacturing Company, and will have general supervision of the sale of supply apparatus in that district in the future. Other changes in the personnel of the Seattle office of that company include the appointment of A. W. Eshelby as manager of the transportation division and A. A. Miller as special representative of the Company in large negotiations and power developments.

Edward C. McCarthy has been appointed treasury and accounting representative for the Westinghouse Electric and Manufacturing Co. at its San Francisco office. Mr. McCarthy replaces A. L. Austin, who has resigned.

B. C. Watts, one of the Denver jobbers, is on his annual trip to the Pacific Coast.

R. A. Balzari, manager of the industrial division of the San Francisco office of the Westinghouse Electric and Manufacturing Company acted as the representative of the San Francisco Electrical Development League and the California Cooperative Campaign at the meeting of the representatives of electric clubs, and cooperative organizations held at Association Island, N. Y., under the direction of the Society for Electrical Development Inc. While in the East Mr. Balzari visited the main works of the Westinghouse company at East Pittsburgh.

Fred Norcross, secretary and general manager of the Home Gas and Electric Company of Greeley, Colo., retiring president of the Colorado Electric Light, Power and Railway Association, presided over the sessions of that organization at Glenwood Springs on September 11-13 in conjunction with the Rocky Mountain Division of the N.E.L.A. The joint convention was one of the most successful in the history of the two organizations. Mr. Norcross'



FRED NORCROSS

connection with the electrical industry of the Intermountain region dates to 1913 when he left the position of trainmaster and assistant superintendent of the St. Louis and San Francisco R.R. to take over the duties of manager of the central station of the Home Gas and Electric Company at Greeley. He was later appointed to the post he now holds with the company.

J. H. Crossley, electrical engineer of Manchester, England, recently spent considerable time in California visiting the various noteworthy hydroelectric developments in that state.

David T. Mason, consulting forest engineer of Portland, is a recent San Francisco visitor.

F. E. Blake, treasurer and manager of the Hawaiian Electric Company of Honolulu, recently visited San Francisco. Mr. Blake came to the Coast to transact business for his company.

Frank L. Blanchard, publicity director for the City Service Company of New York recently inspected all of the Colorado holdings of the Doherty interests, including the developments of the Denver Gas and Electric Light Company.

J. H. Beaufort of the National Stamping and Electric Company of Chicago, is on the Pacific Coast investigating markets and making preparations to get the line of electrical appliances manufactured by his company properly established.

H. V. Bozell, editor of Electrical World, who has been spending some weeks visiting various cities of the West has returned to his headquarters in New York.

Theodore Waage, secretary of the Waage Electric Company of Chicago, is making a tour of the Pacific Coast cities in the interests of his company.

Earl Browne, member of the contracting firm of Browne-Langlais of San Francisco, has been re-elected president of the California State Association of Electrical Contractors and Dealers for the coming year. The problems faced by the association during the coming year are monumental and the election of Mr. Browne to the presidency is recognition of his associates' confidence in his leadership. Mr. Browne has been associated with the San Francisco contractor-dealers since 1907. In that year he joined the Electric Appliance Company where he was



EARL BROWNE

employed for two years. Subsequently he was with the Dunham Carrigan & Hayden Company and the John G. Sutton Company. Three years ago he organized the firm of Browne-Langlais, electrical contractors. He has been active in the affairs of the San Francisco Electrical Development League and also in the California Electrical Co-operative Campaign.

Dr. L. A. Bauer, in charge of the government non-magnetic ship "Carnegie," recently arrived in San Francisco from Australia where he has been supervising the construction of an observatory similar to that in Washington, D. C. The observatory has been constructed for the purpose of studying certain electrical disturbances under the surface of the earth. During May these disturbances were such as to partially cripple the electrical distribution lines throughout the southwestern portion of Australia.

Earle Remington, architect and signal engineer of Los Angeles, recently returned from Chicago where he attended the convention of the International Electric Protective Association. The newly organized association includes all important manufacturers of electric burglar alarms and watchman patrol services in the United States and Canada. Mr. Remington was elected to the position of vice-president of the organization during the convention. He is the only Pacific Coast representative on the executive committee.

J. B. Colesworthy, graduate of the University of Washington, who completed his training as an apprentice at the Westinghouse Electric & Manufacturing Company's East Pittsburgh Works, is now connected with the industrial sales organization of the Los Angeles office.

J. A. Lighthipe, chief electrical engineer, Southern California Edison Company, has gone East to attend the Edison Pioneers Convention at New York City, which will celebrate the 40th anniversary of the opening of the Pearl Street Station.

Frank LeRoy Blanchard, director of Cities Service publications and advertising, is visiting the Doherty properties in the West in order to obtain a working knowledge of all individual company problems. He addressed a meeting of the Rocky Mountain Committee on Public Utility Information in Denver, August 23.

H. B. May of the General Electric Company has just arrived from Schenectady, New York, and is now with the Los Angeles office of the company handling motion picture equipment.

Mires F. Size, formerly with the Martin Electric Company of Denver, agent-jobbers for the Edison Electric Appliance Company in Colorado, is now associated with the Edison Electric Appliance Company in Los Angeles as heavy duty specialist and will be in charge of the heating appliance campaign in southern California for that company.

Colonel Henry M. Bylesby of Chicago, head of a large number of middle western and western public utilities, is a recent San Francisco visitor. Colonel Bylesby came to California for the purpose of conferring with officials of the Western States Gas and Electric Company of Stockton, of which he is the president. This company is at present engaged in developing a large hydroelectric project on the American River in the Sierra Nevada mountains.

Wigginton E. Creed, president of the Pacific Gas and Electric Company, is making a short business trip to New York and other Eastern business centers.

Walter C. Heston, formerly Industrial Power Engineer with the Portland Railway, Light and Power Company, of Portland, Oregon, has been appointed Pacific Coast Editor of Electrical World with headquarters in San Francisco. He will assume his new duties on September 15. Mr. Heston comes to the Electrical World staff after 11 years of experience in electrical engineering



WALTER C. HESTON

fields and 3 years' editorial work as editorial representative for the Journal of Electricity and Western Industry and Electrical World at Portland. His early electrical engineering training was received at Benson Polytechnical School at Portland, after which he became identified with the Portland Railway, Light and Power Company. His work with that company has been particularly in the electrical distribution engineering field where he was for two years superintendent of distribution. In 1919 he became Industrial Power Engineer in the commercial department of the same company, which position he held until the present time. Mr. Heston served two years on the hydroelectric and technical committee of the Northwest Electric Light and Power Association and has just completed a term as chairman of the Portland Section of the American Institute of Electrical Engineers, and his many years of activity in association work gives him a wide acquaintance in the electrical industry of the Northwest.

Lawrence Davis, a special representative of the National Electrical Contractors' Association, and Kenneth McIntyre, a representative of the Society of Electrical Development, were the guests of honor and the principal speakers at a special meeting and banquet held in the L. C. Smith Bldg., Seattle, recently, under the auspices of the Seattle Electric Club. The meeting was attended by practically every man of the electrical industry in Seattle.

Chas. D. Kunkel, power apparatus specialist of the Western Electric Company of Los Angeles, has just left for Association Island, New York, to attend the Western Electric Company's power apparatus conference. While in the East, Mr. Kunkel will visit the various plants of the company and will spend about a week at the main plant at Hawthorne, Illinois, which employs some thirty thousand people.

H. B. Broughton of the Illinois Electric Company of Chicago, has just arrived in Los Angeles to take over the Apex-Rotarex department of the Illinois Electric Company of Los Angeles. Mr. Broughton was with the Illinois Electric Company of Chicago from 1913 to 1919, going from there to the Northwest where he was Apex-Rotarex representative for three years. After that he was with the Chicago company prior to assuming his present duties.

The Cutler-Hammer Manufacturing Company, Milwaukee has placed on the market a standard line of starters and controllers for use in public and office buildings, theaters and schools. Heretofore this class of control equipment differed somewhat to each set of specifications and were not offered as a standard line. The new types are based on many years of experience in designing equipment of this type and are suited for many varied applications. The controllers and starters are enclosed and are free from both fire hazard and injury to the operator. Manual or automatic controllers are made for all kinds of motors, both adjustable and constant speed, a.c. or d.c.

The Cutler-Hammer Mfg. Co., of Milwaukee, has standardized a motor drive and automatic economy switch for typesetting machines. Motors of 1/3 hp. of either d.c. or a.c. design are furnished and are controlled by the automatic switch for cutting off the current and stopping the motor after a predetermined time, of from one to three minutes, if no work is being done on the machine. Performance records kept in plants using the equipment show a saving in current for the typesetting machines as high as 44 per cent. The equipment may be secured for either new or old machines.

The National X-Ray Reflector Company, Chicago, announces that its western district offices have been moved from 804 Security Building to 631 Pacific Finance Building, Los Angeles. Offices have recently been established in San Francisco at 902 Monadnock Building. The San Francisco offices will be in charge of H. C. Barnard, sales engineer.

The Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., is distributing Publication No. 4249-A, describing its line of insulating and soldering compounds. Some of the materials treated in the publication are baking varnishes, air-drying varnishes, insulating compounds, finishing materials, insulating glue, soldering flux, and lubricating oil.

The F. W. Wakefield Brass Company, of Vermillion, Ohio, has issued discount schedules on commercial lighting hangers, readjusted as of September 1. The lower prices will affect "Red Spot" standard hangers, ornamental hangers, and general purpose hangers, of both suspension and ceiling types.

The Kuhlman Electric Company of Bay City, Mich., has just issued Bulletin No. 113, which describes the new Kuhlman disconnecting type series-multiple transformer for street lighting. The new transformer is one which does not require splicing when connecting and it is absolutely self-protected from water and the elements, making it particularly valuable for street lighting work.

Manufacturer, Dealer, and Jobber Activities

The Illinois Electric Company, of Los Angeles, has been reorganized with the following officers: C. B. Hall, president; H. E. Sherman, vice-president and sales manager. S. W. Murray, formerly assistant secretary-treasurer, is now secretary-treasurer, and J. R. Keller, auditor, is now assistant secretary-treasurer.

The Electric Furnace Company, of Salem, Ohio, manufacturers of the Baily Electric Furnace, have issued two folders, which contain statements of users of their furnaces. Along with the statements are illustrations of the furnaces in actual working conditions. The uses of the various types of furnaces constructed by the company are also announced in the folders.

The Jewell Electrical Instrument Co., of Chicago, has recently added so extensively to its line of electrical measuring instruments that it became necessary for it to issue an entirely new catalog. Each instrument is clearly illustrated and its applications, size, scale length, accuracy and general characteristics described in detail. In the back of the catalog detailed dimensional drawings are shown of each instrument together with full size scales and complete listing of readings and prices. The sales department of the Jewell Electrical Instrument Company is revising their entire mailing list and it is their wish that every electrical engineer and user of electrical measuring instruments send his name asking for a catalog. They are also preparing to send out their 1922-23 leather vest pocket "Jot-book" covers. The Jewell "Jot-book" or vest pocket memorandum pad, with monthly calendars and filler pads, has become an established and permanent feature of Jewell publicity.

The General Electric Company has recently issued Bulletin No. 47606, describing relays, their application and operation. The bulletin describes numerous arrangements where special types of relays are used. In the back of the bulletin, a table of applications of standard relays gives a general idea of the different types and applications of the more common relays.

The Crooks-Nelson Household Appliance Co. of Denver, the largest exclusive appliance store in that city, has closed its retail store at 1648 California St.

Radio Special, 1515 Cheyenne Place, Denver, Colo., has been opened as an electrical retail store, featuring radio equipment. Harry Carlson of the Carlson Ice Cream Co., and D. H. Irions, formerly of the Electrical Review staff of the International Trade Publishing Company, are the owners of the new store.

The Walsenburg Electric Supply Co. at Walsenburg, Colo., has been organized as a retail store by Harold J. Reed, A. H. Carey and T. A. Dickey.

The Eastern Utah Electrical Supply Co. of Price, Utah, has established a branch at Grand Junction, Colo., with Glen Nelson in charge.

The Denver branch of the Western Electric Co. and the Denver Gas and Electric Light Co., early in September started a sales campaign on washing machines which is proving one of the most comprehensive undertakings in this line in the Rocky Mountain territory for several years. Considerable advance advertising was done leading up to the campaign. Sufficient time has not elapsed to estimate the amount of business obtained, but it is generally believed that a record will be established. F. E. Hazard, director of sales of the Cenlon Electric Washer Co. of Cicero, Ill., made a trip to Denver to help develop the campaign.

The Eastern Utah Electric Company of Price, Utah, will shortly move into larger and more commodious quarters in a new building which is being constructed by them on Main Street. With this additional room augmented by a large warehouse on North Ninth Street, the electric company will greatly increase its various lines of electrical goods. The new store will be divided into departments. The company was organized three years ago and at the present time is doing a wholesale business over the whole of eastern Utah and western Colorado.

The Electrical Supply and Construction Co. of Denver has relinquished its contracting department, according to W. J. Keating, the manager, in order to develop the jobbing and manufacture of a medium priced line of lighting fixtures.



VISITORS

Before the month is out the entire electrical industry here in the West will have met these two genial gentlemen from the East. He on the right is Laurence W. ("Larry") Davis, field representative for the National Association of Electrical Contractors and Dealers. His smiling Scotch partner is Kenneth A. McIntyre, field man for the Society for Electrical Development, Inc. We know a good one on Kenneth. He lived in the West when a lad, later moving East. At the age of eleven, he decided that Rye, N. Y., could not compare with California, so one evening he took his young brother and sister and headed West. The police caught him before he got very far. He is back to the West for the first time since then.

Business Outlook in Western Market Centers

Reflecting the Trend of Community Thought on Conditions and Events Affecting
Business and Industrial Activities Throughout the West

Compiled and edited for the Journal of Electricity and Western Industry by correspondents in all principal Western cities.

SAN FRANCISCO

Business conditions in San Francisco and northern California in general, show a particularly favorable trend toward better conditions. The usual summer slump was much lower this year than it has been for some time and this fact seems to augur a particularly busy fall period.

Building permits have increased greatly over the last month, the valuations being doubled. Many new school buildings, large apartment houses and substantial residences are being built both in and around San Francisco.

The sugar pine industry near Fresno is to receive the benefits of a new railroad which is now under construction. Cement is in such demand that four of the large producing companies are behind in orders by at least 1,000 cars. There are also several large public utility enterprises which are increasing this demand for cement.

The closing out of summer stocks is the feature in the retail trade and the jobbers in all lines report business good and increasing. The volume of sales exceeds that of last year.

The movement of general freight is still slow, but the favoring of fruit shipments by embargo, has aided this industry to some extent. The aid has not been as much as might be expected, however, as western railroads have, in the past, given this same preference to the fruit men. However, the freight movement condition is causing only inconvenience and is not critical.

PORTLAND

Although the rail strike has not had any drastic effect upon business as yet, it is certain if it continues much longer serious inconvenience and loss will be caused to shippers, particularly apple growers. Lack of cars has already caused a slump in the lumber shipments and a great deal of lumber for domestic markets is being diverted to water carriers.

The building activity continues and from all indications a record in valuations of permits will be established this year.

Electrical jobbers and contractor-dealers report business good.

DENVER

Despite the fuel shortage, transportation difficulties, and the attendant dullness of the mid-season business, conditions in this section of the West are far better than is generally believed. This is evidenced by a resume of the bank clearings in Denver for the first eight months of the year and it shows almost a steady increase each month, totaling over fifty million dol-

lars more than for the same period in 1921.

Building of dwellings and industrial structures is keeping up. Nearly every community of any size in this district is making some municipal improvement. Railroad service is getting better and should relieve the situation found in the fruit producing sections of the state. According to reports, agricultural prospects continue satisfactory and increasing activity is noted in the metal mining regions.

Stimulation is still being applied in liberal doses to retail sales in nearly all lines. Electric appliance sales are at a low ebb. Lighting fixture business is fair. Transmission material and heavy duty equipment is much in demand.

SALT LAKE CITY

Reduction in freight rates between Salt Lake City and California Pacific Coast points, on several commodities, is an important recent development in the business situation in the intermountain section. Packing house products, canned goods, chocolate, cocoa, and zinc oxide are the commodities involved up to the present time. This is considered a very important move in the right direction for stimulating production.

Mining activity continues to increase, and this industry is more active than for some months past. Production of copper by the Utah Copper Company, Chino, Ray Consolidated and Nevada Consolidated companies, which resumed work last April after a year's shutdown, shows a steady increase from month to month.

Retailers report, as a rule, greater sales than for the corresponding period of last year, although business in most lines is somewhat slow, with the exception of lumber and building material.

The railroad strike situation is having a retarding effect on business in general.

Electrical appliances are moving fairly, but there is still room for improvement.

It is expected that the Rocky Mountain Electrical Exposition, to be held at Salt Lake City this fall, will introduce many educational features which will have a decidedly favorable effect in increasing the use of electricity in industry and in the home, which will mean, of course, increased activity among the electrical people.

SEATTLE

Though handicapped by a scarcity of logs and a car shortage, mills reporting to the West Coast Lumbermen's Association cut, sold and shipped more lumber in the last week in August than for several weeks previous. Sales showed a sharp increase, from 72,528,987 ft. of the week previous to 83,154,728 ft. Production was 4 per cent greater than

normal. An increase in the percentage of water shipments indicates that shippers are looking for an outlet by water, while the railroads are handicapped by the shopmen's strike and the shortage of cars at this season of the year.

The fact that the harvesting of crops is at its height and is requiring a large amount of railroad equipment has further complicated the situation, and crop-growers, especially in the apple centers, are being seriously delayed in shipment of their fruit.

The log shortage, caused by the forest fires during the long dry spell, is being removed to some extent, due to the resumption of activities in many camps following the rainy weather of the past two weeks.

Retailers and dealers report a very satisfactory volume of business during August. Electrical men are very much interested in the coming Electric Week and are preparing to capitalize to the fullest extent the publicity attendant upon it.

LOS ANGELES

Los Angeles continues well up in the lead in building activities of all cities in the United States, ranking fifth for the month of July and third for the first seven months of 1922, being surpassed during this period by only New York and Chicago. For the month of August there were 4,294 building permits issued with an estimated valuation of \$11,523,890 which represents a considerable increase over the previous month with an estimated valuation of permits issued of \$8,064,018.

The attention of the electrical men in Los Angeles and vicinity has been attracted to the Electrical Section of California's Pageant of Progress and Industrial Exposition, where the most comprehensive display of electrical apparatus and appliances ever witnessed in southern California is being held. There are demonstrations of all types of electrical labor-saving and heating appliances, industrial apparatus and lighting exhibits, as well as a free electrical cooking school which is being conducted by the Home Economic Department of three of Los Angeles' leading newspapers, under the auspices of the California Electrical Cooperative Campaign.

The demands for electrical apparatus and appliances continues and electrical men in this section are generally pleased with the excellent business that has maintained throughout the summer months and are anticipating a very good fall business.

The railroad strike has had no marked effect on business in this section even though shipments are long overdue and there is a slight scarcity in some lines.

Construction News and Industrial Developments

Suggesting to the Engineer, Contractor, Manufacturer, Dealer, Agent and
All Business Men Opportunities for New Business

Bridges

Cal., Sacramento—Jenkins and Elton, Sacramento contractors, have been awarded contract for construction of the Portola bridge, Plumas county.

Cal., Los Angeles—A concrete viaduct 1,900 ft. long to cost approximately \$200,000 will be constructed as the main feature of outer harbor boulevard project, according to plans approved by Harbor Commission.

Cal., Los Angeles—The board of harbor commissioners has advertised for bids to be opened Sept. 28 for the new steel bridge to connect Terminal Island with the mainland at Badger Avenue. The cost is estimated at \$750,000, approximately \$400,000 of this amount being for steel work.

Cal., Sacramento—A contract for the construction of a reinforced concrete girder bridge across the San Gabriel river near Azusa, in Los Angeles county, was awarded by the state highway commission to D. A. Foley and Company of Aitkin, Minn. The amount is \$124,088.70. Engineers of the commission estimated the cost of the bridge at \$146,966. The new structure will replace an old bridge which is now in use, though there is to be a slight change in the location.

Cal., Los Angeles—Bids are being taken by the Los Angeles harbor commission for constructing the Strass double leaf bascule bridge which is to span the channel between Terminal Island and the mainland. The bridge will be 620 ft. over all. The main span will be 220 ft. with a clearance of 188 ft. between piers, and there will be a 50-ft. tower span and 150-ft. approach span at either end. The superstructure will be 78 ft. wide, with a double railway track in the roadway and a 6-ft. walk on either side for pedestrians. The four piers, which are now being built by the Ross Construction Company, will be 80 x 24 ft. at the base and extend 80 ft. below the water level. There will be 4,540,000 lb. of steel and 400,000 lb. cast bronze and other metals in the superstructure. The total cost is estimated at about \$750,000, of which \$234,000 will be expended upon the substructure.

Cal., Los Angeles—County Bridge Engineer Armstrong is preparing plans for a concrete bridge across the mouth of San Gabriel river at Alamitos Bay. It will consist of ten 30-ft. spans and one 42-ft. span, with concrete piles and abutments. Another bridge project ordered by the supervisors is a structure of type yet to be determined, across a slough opening into Alamitos Bay, east of the San Gabriel river mouth, on the state highway, not far from the county line. It will be approximately 200 ft. long. Plans will also be started shortly for a concrete bridge across the mouth of Topanga canyon, on the coast highway. It will consist of four 54-ft. spans, with concrete piers and abutments on piles.

Ore., Portland—The following bridge contracts have been let by the state highway commission: Gilliam county—Oregon-Washington highway; two concrete bridges over Willow creek near Heppner junction; Tobin & Pierce, \$12,855. Lincoln county—Newport-Corvallis highway; steel span over Yaquina river; Union Bridge Company; \$11,462.50. Linn county—Pacific highway; wooden span across Calapooia river; E. V. Olds; \$13,362; referred to county for consideration. Yamhill county—McMinn-

ville-Tillamook highway; steel span over Willamina river; Marshall & Barbur; \$11,434.15; awarded subject to approval of county.

Ore., Salem—The state highway commission has announced the awarding of the contract for the construction of a concrete arch bridge across the North Umpqua river on the Pacific Highway, to H. E. Deering of Portland. There are to be seven arches and the bridge is to be about 100 ft. in length. The cost will be about \$125,000, the county, state and government sharing the expense.

Ore., Portland—Contract for surfacing the Mount Hood loop in Clackamas county, a distance of approximately 10 miles, has been let by the state highway commission to A. D. Kern.

Wash., Seattle—All bids for the construction of superstructure of the Spokane Street bridge, estimated to cost \$1,250,000, scheduled for opening August 25, were returned unopened by the city council, and a new call for bids to be opened October 6, issued. New specifications will be issued. Structure consists of a 288-ft. double leaf bascule steel bridge, with two 140-ft. fixed span approaches. Bridge will be 45 ft. wide, with room for two car tracks and 6-ft. sidewalk. Principal quantities involved are 3,760,000 lb. of structural steel, 351,000 lb. of machinery and 8,750 yd. of concrete in counterweight.

Wash., Anacortes—The Anacortes Pile Driving Co. has secured the contract for rebuilding the Swinomish bridge.

Buildings (Industrial)

Cal., Santa Barbara—Frank Henderson, supervision architect of the James L. Stewart Company, has brought to Santa Barbara plans for a factory to be erected by the Sears-Roebuck Company. Plans have been approved by Frank Siegel, a director of the company. H. Thompson, superintendent of construction for the Stewart company, will arrive shortly and it is expected that work will begin at once. The plant which will employ over 500 workers, will cost about \$800,000. It will consist of four buildings, each 125 x 175 ft. It is also stated that Mr. Siegel, owner of several hotels in Chicago, plans to build a large hotel in this city.

Cal., Los Angeles—Architect W. J. Saunders, 227 Laughlin Building, has prepared plans for a 4-story and basement, Class C furniture warehouse for Barker Brothers, to be erected adjoining the present buildings at Hewitt and Palmetto Sts. Concrete basement and first floor slab, 120 x 130 ft., reinforced concrete exterior walls, mill construction floor, composition roofing, steel sash, metal skylights, elevator, automatic sprinkling system, maple finish floors. Work will be done by subcontract or day work.

Cal., Los Angeles—The Santa Fe Railway is having plans prepared by its engineering department for an addition to the ice plant at Bakersfield and for a new ice plant at Needles. The buildings will be of reinforced concrete construction and will cost about \$150,000 each.

Cal., Los Angeles—Architects John Parkinson and Donald B. Parkinson, 420 Title Insurance Bldg., are preparing plans for an additional unit to the terminal warehouse buildings at 7th and Alameda Streets for L. A. Union Terminal Company. It will be a 4-story and basement, 100 x 560 ft., reinforced concrete, class A, construction, flat slab system, stucco exterior, steel sash,

steel rolling doors, elevators, conveyors, sprinkling equipment; \$500,000.

Cal., Los Angeles—Architect Albert C. Martin, 430 Higgins Building, and Frank L. Stiff, associate architect, have prepared preliminary plans for the first unit of a large factory to be erected at San Pedro for Pacific Coast Borax Company. It will be a 2-story, 250 x 400 ft., steel frame, brick walls, reinforced concrete floors, elevators, etc. The building is designed for 5 stories.

Cal., Pomona—Teetor Adding Machine Company will purchase a site next week and will build a factory for the production of adding machines, at Pomona. The factory, upon which work will be started at once, will contain about 50,000 sq. ft. floor space. The entire project will cost about \$200,000, part of which is being raised by local subscription. C. J. Carr and J. A. Heaton, of the company, have been in Pomona for some time arranging for the proposed enterprise. The Chamber of Commerce has appointed a committee to aid in the matter.

Cal., Los Angeles—Architect John M. Cooper, 335 Marsh-Strong Building, has prepared plans for a group of factory buildings at Slauson and South Park Aves. for Jacob H. Jonas, Class D construction, 100 x 200 ft., 60 x 80 ft. and 50 x 150 ft., respectively; redwood and corrugated iron siding, composition roofing, plaster front on one building, cement floors; \$35,000.

Cal., Anaheim—G. E. Fickett, 638 S. Western Ave., has been awarded a contract at \$160,000 for erecting a five-story Class A warehouse at the plant of Anaheim Sugar Company, between Anaheim and Fullerton, for Arthur Peck. Reinforced concrete construction, 44 x 260 ft., composition roofing, metal frames and sash, metal skylights, two elevators.

Cal., Los Angeles—Plans for the enlargement of the plant of the Pacific Ready-Cut Homes, Inc., are under consideration and it is expected that within the next year an expenditure of \$150,000 will be made for the enlarged factory, which will include new cabinet shops, additional electric loading cranes, sash and door factory, dry kilns, etc. Berne S. Barker is secretary of the firm.

Cal., San Francisco—The U. S. Metal Products Co., 330 Tenth Street, will erect a manufacturing plant adjoining the present quarters on Tenth Street. The structure will be of brick construction. Work on the foundation is under way. The selection of an architect to prepare plans for the proposed building is yet to be made.

Cal., Richmond—Announcement is made by L. E. Brown, president, and his associates of the Luning Minerals Reduction Company plant, that a factory will be erected on the site of the industry at Twenty-first Street and Santa Fe right-of-way. About \$50,000 will be invested, it is said.

Cal., San Francisco—Construction work has started on a two-story and basement, concrete, fireproof factory building and warehouse to be erected on the northwest corner of Fifth and Clementina Streets for Louis R. Lurie. The building is to be completed in 90 days and will represent an investment of \$150,000.

Cal., Los Angeles—The Graham Construction Company is planning the erection of a ten-story, Class A loft building, especially designed to meet the need of light manufacturing con-

cerns, on property recently leased from Eric Fowler at 730-736 South Los Angeles Street.

Colo., Denver—The National Biscuit Company will shortly erect a new five-story factory at 19th and Market Streets, to cost approximately \$400,000.

Ore., Hood River—Storage Plant—Oregon's cooperative agency of fruit growers is planning a three-story concrete storage plant to be built on the site of the original structure built 30 years ago, which is now being razed. The new plant will be an annex of existing plants extending for 800 ft. along the O. W. R. & N. line and will cost about \$25,000.

Utah, Nephi—The Nephi Plaster & Manufacturing Company of Nephi will shortly begin several important extensions to its plaster mill and its Keene's cement department. Additional modern fine-grinding machinery will be installed and a complete new unit will be erected to prepare land plaster (agricultural gypsum) and crushed gypsum for the Portland cement trade. Larger storage facilities will also be provided.

Wash., Vancouver—Glass Factory—The Oregon & Washington Glass Company, a \$500,000 corporation, announces that it has set aside \$40,000 for the construction of a bottle factory in Vancouver.

Wash., Yakima—Meat Plant—Contract has been let for the construction of a \$215,000 addition to the packing plant of the Yakima Meat Company, and work will start at once. A large quantity of machinery will be required.

Wash., Seattle—Telephone—The Pacific Telephone & Telegraph Company has purchased a site costing \$100,000 on Lake Union, across from the Ford assembly plant, on which they will erect shops, warehouse, and garage, costing \$100,000.

Wash., Aberdeen—The A. A. Star Transfer Company is planning the erection of a brick and concrete warehouse at Hume and M Sts., to cost approximately \$40,000. Two stories will be built at the present time and two additional stories at a later date.

Wash., Seattle—Lumber Mill—Construction of a large sawmill and box factory by the Puget Sound Lumber & Box Company on Lake Union, to replace a plant burned one year ago, will begin immediately. J. W. Maxwell, president of the National City Bank, heads the Lumber Company.

Dams

Idaho, Parma—Work has started on the grading of a wagon road to Black Canyon, five miles northeast of Emmett, where the \$1,200,000 government dam and power plant will be located. Reclamation officials in charge of the work announce that construction of the dam will move rapidly. Machinery, building materials and supplies of all kinds have been ordered. J. B. Bond, manager, and Engineer Ward are directing the work.

Highways

Cal., Sacramento—The state highway commission has awarded a contract for grading 3.25 miles of highway in Ventura county between the Hueneme road and a point $3\frac{1}{4}$ miles southeasterly, to the George Pollock Company of Sacramento on its bid of \$33,640. The estimate was \$26,074. A contract for 4.34 miles of asphalt and concrete surfacing in Santa Clara county between Carnadero Creek and the south boundary was awarded to the Clark & Henery Construction Company of Stockton. The Isbell Construction Company of Fresno received the contract to grade 11.31 miles between Chester, Plumas county, and Westwood, Lassen county. The bid was \$116,227.50 as against the highway commission engineer's estimate of \$114,721.50.

Cal., San Francisco—The board of public works has awarded to Healy Tibbitts Construction Company the contract for construction of

the fourth section of the beach esplanade, extending from Cabrillo Street to a point below the Chalet, at approximately \$54,000.

Cal., Fresno—County supervisors have just awarded a contract to T. A. Hanrahan of San Francisco for paving 10.14 miles of county highway on the Biola road at \$16,666 per mile. The bid was almost \$2,600 per mile under the engineer's estimate. County Surveyor Chris P. Jensen states this is the lowest bid for county highway work since the \$4,800,000 good roads bond issue was voted by Fresno county. At this price the entire county highway system as originally planned could have been built within the amount of the bond issue.

Ore., Salem—B. W. Bartlett, of Corvallis, has been awarded the paving contract for the new Pacific highway through the town of Jefferson, in southern Marion county, at a cost of approximately \$25,000.

Ore., Portland—Contracts for highway work in eleven counties have been awarded by the state highway commission, including the following: Hood River county—Mt. Hood loop, Hood River-forest boundary section, Unit No. 1, 9.17 miles, stone surfacing; Albert Anderson, \$50,320; unit No. 2, 7.89 miles stone surfacing, Albert Anderson, \$47,816.25; unit No. 3, 6.08 miles, rock surfacing, Rood & Josselyn, \$36,931. Crook county—Ochoo highway, Prineville-Jones mill section; 17.3 miles rock surfacing; J. K. Shotwell, \$44,815. Harney county—Central Oregon highway, Burns section; 4.2 miles grading and graveling; E. E. Larsen, \$19,963. Lake county—Klamath Falls-Lakeview highway, Drewes valley section; 8.8 miles, grading and surfacing; H. J. Hildeburn, \$102,525; Lakeview-Bend highway, Valley Falls-Chewaucan Narrows section; 12.3 miles gravel surfacing; H. J. Hildeburn, \$36,318. Umatilla county—Cold Springs highway, Holdman-Harp's ranch section; 3 miles grading and surfacing; Carlson & Nyberg, \$42,362. Oregon-Washington highway, Vinson section; 4 miles rock surfacing; General Construction Company, \$17,880; to be completed in 1923. Newberg to Multnomah county line; 3.3 miles paving; Cummings & La Porte, \$94,075.

Ore., Roseburg—Contract for construction of the Scottsburg-Mill Creek section of the Roseburg-Reedsport highway was let by the county court to A. C. Henson, contractor, on a bid of \$52,378. The completion of this contract will finish the road to the coast, except for a gap of three and three-fourths miles on which government aid is being sought. This section lies between Mill creek and Brandy bar, mostly within the Siuslaw national forest. It is the most difficult part of the construction and will cost in the neighborhood of \$180,000, in addition to \$100,000 required for a bridge. The county will be able to provide about \$80,000 for this section, having spent about \$175,000 already for the work completed and under contract.

Ore., Portland—The Wallowa county court has let the contract for the Powwotka market road up Whisky Creek to the forest boundary to the Johnson Contract Company of Portland at \$44,000. The road will be $5\frac{3}{4}$ miles long.

Wash., Wenatchee—The contract for building approximately six miles of the Sunset highway through Blevett Pass from Peshastin Creek to the forest boundary has been awarded to Burke, Sengfelder & Berry, Wenatchee contractors, on a bid of \$49,300.

Wash., Seattle—Work is now under way on the contract for the paving of $4\frac{1}{2}$ miles of the Kent-Orillia section of the Pacific highway. Albertson, Connell Bros. & Walsh of Tacoma are doing the work. Two concrete bridges will be constructed.

Wash., Olympia—The state highway commission will receive bids until October 3 for two highway contracts, as follows, the last to be awarded this year: clearing, grading, draining

and surfacing with crushed rock $12\frac{1}{4}$ miles of the North Bank highway, between Underwood and Lyle, in Klickitat county; grading and draining $20\frac{1}{2}$ miles of the Inland Empire highway between Umpatnum and Selah, Kittitas and Yakima counties.

Irrigation Projects

Cal., Modesto—Sale of the electrical franchises for the Turlock irrigation district has been ordered advertised by the board of supervisors. Bids will be received up to 10 o'clock a.m., Sept. 25.

Cal., Oroville—Bids for the construction of the drainage system for Butte County Drainage District No. 200 were opened by the directors of the district in Oroville. W. W. Green of Biggs is president of the district. George Pollock Company, being the lowest bidder, was awarded the contract at 23 cents a yard on part of the system and 19 cents a yard on some of the ditches. His average was $21\frac{1}{2}$ cents per yard.

Cal., Oakdale—Property owners in Oakdale irrigation district recently voted in favor of a special assessment of \$50,000 for improvements on laterals, canals, ditches, extending irrigation water as far as the Griffin tract of 1,000 acres. A 600-acre tract near Riverbank will also be brought under irrigation and a \$6,000 pipe line constructed through this city to replace the open ditch now used.

Idaho, Newdale—A contract for the enlarging and lining with concrete the main canal of the Canyon Creek irrigation district, embracing about 7,000 acres in the vicinity of Newdale, has been awarded to the Pocatello Construction Company of Pocatello, Idaho, at the contract price of \$42,000. The work is to be started September 15 and completed within 100 days. Cotton & Wilson, of Idaho Falls, are the engineers in charge of the work.

Ore., Klamath Falls—A contract has been executed between the government and the Malin and Shasta View, Cal., irrigation districts, providing for the irrigation of 10,000 acres of land. Malin will be bonded for \$100,000 and Shasta View for \$120,000, to install pumping plants and build ditches. The government will furnish the water.

Wash., Wenatchee—Representatives of the Wenatchee Reclamation District and of the Washington Coast Utilities Company are working together to increase the supply of water delivered to the high line district, and contracts covering the work are being drawn up. The Washington Coast Utilities Company will be compelled to enlarge the upper end of the canal, which they own. The reclamation district must make provision to carry an additional supply of water by enlarging and changing its facilities. A proposal will be submitted to the water users later, which if voted favorably upon, will provide for issuance of bonds. The cost is estimated at \$25 to \$35 per acre, involving 12,000 acres.

Wash., Aberdeen—All bids for the improvement of drainage district No. 4, located on the southern edge of Aberdeen, and comprising 600 acres, were rejected, and new bids called for, to be opened September 15. The improvement is estimated to cost \$90,000; the low bid was \$82,080, but the length of time provided for completion was unsatisfactory.

Wash., Yakima—City commissioners have awarded contract for the construction of irrigation laterals in the district east of the Northern Pacific tracks and north of Pacific Avenue to S. A. Campbell of Sunnyside on his bid of \$72,095.85.

Wash., Okanogan—The State Department of Conservation and Development, through the division of reclamation, is working on plans and specifications leading to the development of nearly 8,000 acres of agricultural land situated

between Tonasket and Loomis in Okanogan county. The department has agreed to purchase the necessary bonds, which will total approximately \$600,000. The district now contains 900 acres under cultivation. A soil survey of the land projected for development shows it to be particularly favorable.

Power Plant Equipment

Colo., Boulder—C. A. Semrad, general manager of the Western Light and Power Company, a cities service subsidiary, has just returned from New York City with authority to improve the Lafayette plant of the company to the extent of several hundred thousand dollars provided sufficient water can be secured for the plant, which is the main steam plant of the company system. It is also announced that similar authority had been granted for improving the Cheyenne, Wyo., plant to the extent of \$125,000.

Power Projects

Cal., San Francisco—Bent Brothers, 1714 Eagle Ave., Los Angeles, have been awarded contracts to construct the Bullard's Bar project in Yuba county for the Yuba development with offices in the Hobart Building, San Francisco. For the dam, Bent Brothers were awarded the contract at \$330,680, and the power house for \$12,974. The present Bullard's dam will be raised. Bids for the power house equipment are now being received by the owners, who also plan to construct 20,000 lin. ft. of roadway, 6.1 miles of transmission line, equipped with three copper wires, 2-gage, porcelain insulators, using 20 poles to the mile, carrying 60,000 volts. The Constant Angle Arch Dam Co., Hobart Bldg., San Francisco, is the designer.

Cal., San Francisco—The board of public works advised the public utilities committee of the board of supervisors that it had accepted a bid of the Westinghouse Electric and Manufacturing Company for transformers for the Hetch Hetchy project in the sum of \$379,584, and asked that an appropriation be made by the supervisors in this amount. The committee sent the request to the finance committee with a favorable indorsement.

Mont., Dillon—L. K. Adams, manager of the Union Electric Light Company, has announced that his company will construct a transmission line to Sheridan for delivery of power purchased from the Montana Power Company. The cost is estimated at \$50,000.

Utah, Brigham City—A new electric feeder line is being constructed by Brigham City from the new municipal power plant at the mouth of Box Elder canyon to Eighth West Street. The distribution system of the plant will be reconstructed in some parts of town in the very near future, and it is the intention of the city manager to ultimately rebuild the distribution system over the entire city in the course of time.

Utah, Salt Lake City—H. W. Taggart, of Williamsport, Pa., has applied to the state engineer of Utah for a permit to divert 20 cu. ft. of water from Center creek in Iron county. The water is to be used for the purpose of furnishing electric energy for light and power to Iron county.

Utah, Levan—The town of Levan has entered into a contract with the Big Springs Power Company of Fountain Green, Utah, for the furnishing of electric light and power to its citizens. Work is progressing rapidly on the building of transmission and distribution lines for this purpose. One year ago bonds to the amount of \$16,000 were voted for the purpose of bringing electric service to the town.

Wash., Aberdeen—A contract for erecting 5.4 miles of 10,000-volt transmission and telephone line on the Olympic highway, starting at the city limits of Montesano and extending toward Aberdeen, has been awarded to E. C. Bates of

Seattle by the Washington Coast Utilities Company. This line will connect with a similar one to be built from Aberdeen by Mr. Bates for the Grays Harbor Railway & Light Company and the completed improvement will supply current, furnished by the Grays Harbor Railway & Light Company to the customers of the Washington Coast Utilities at Montesano and Elma. Under arrangement, the line will be built jointly by the two companies.

Wash., Tacoma—The city council accepted by resolution the franchise granted the city last month by the Pierce county board for the construction and maintenance of power lines on and over certain county roads, as required for the Tacoma-Seattle intertie power line, the franchise to run for 50 years.

Wash., Stevenson—Contractor McKeighan has started the construction of a concrete power house on Hermon creek, above Cascade Locks, for the Skamania Light & Power Company. The plant furnishes light and power on both sides of the river and has lately extended its lines to Eagle creek and resorts along the river.

Street Lighting Systems

Utah, Ogden—The Ogden city commission has adopted a contract with the Utah Power & Light Company for the lighting of Eccles Avenue between Twenty-fifth and Twenty-sixth Streets.

Wash., Seattle—Assistant Corporation Counsel Donworth has completed draft of legislation providing for a \$2,000,000 bond sale to finance extensions and betterments to the city light and power system, and bill will be introduced in city council.

Wash., Aberdeen—Business men of the city, with James Marlatt, chairman of the Chamber of Commerce committee, are considering plans for financing a boulevard lighting system in the city.

Railways

Ariz., Phoenix—Construction of 750 miles of electrified railway in Arizona is proposed in the near future by the filing of incorporation with the corporation commission by the Staley system of electrified railway, R. E. Grace and Carl A. Davis, Phoenix, and William L. Staley of Los Angeles. Theo. H. Lohman of San Diego and W. E. Bell of East Las Vegas, incorporators. The railway will start at Arizona and New Mexico state line and run to the Arizona-Mexico boundary line.

B. C., Vancouver—All railroad trackage on Industrial Island, a government owned industrial center in False Creek, Vancouver, has been electrified. The work of installing the poles and trolley lines has been completed by W. W. Fraser of Vancouver. All switching and hauling will be done under contract by the B. C. Electric Railway Co., Ltd.

Cal., Los Angeles—Pacific Electric Railway Company has submitted to the city council a proposition calling for a general street car and "bus" system for the city. The idea would include numerous extensions to railroad lines, costing about \$125,000. The principal item would be \$53,000 for an extension on Third St. line east on Montana Ave. to 17th St. The company was recently awarded a franchise for the purpose of construction of a \$2,000,000 four-track subway tunnel back of Hill Street Station, between 4th and 5th Sts.

Cal., Los Angeles—A bond issue of \$60,000 for repairing and extending the old wharf of the Southern Pacific Railway Company at Newport, was submitted at a special election, Sept. 11, in Municipal Improvement District No. 2, Newport Beach. The railway approach to the wharf is a high earth embankment and one of the first things that will be done if the city buys the pier will be to remove the embankment and continue the ocean front walk on one level.

City control of the old wharf will contribute materially to the development of the entire beach.

Colo., Denver—The Denver and Rio Grande Western railroad through its receiver, Joseph H. Young, has been given authority by the United States court to expend \$2,100,000 for improvements on various parts of its system. Replacement of rails on 250 miles of track will be the first work undertaken.

Colo., Denver—The Denver Tramway Company is planning to provide a street car line extending about one-half mile from the Globeville line to the new Burlington shops for the accommodation of workmen at the new C. B. & O. Railway shops. E. Stenger is receiver of the tramway company.

Utah, Salt Lake City—The initial contract for work to be undertaken in the development of Utah's iron deposits by the Columbia Steel Corporation has been awarded to the Reynolds-Ely Construction Company. The contract involves the grading for the Carbon County railroad, a branch line to the company's coal holdings in Carbon county, the grading for the tippie yards, construction of the gravity tram line and driving of a tunnel to open up the coal deposit.

Streets and Sewers

Ariz., Tucson—Resolution of intention has been adopted by city council for improving streets in northeast section of the city, including portions of Park, Tyndall, Euclid, Second, Third, First and other avenues, between Speedway and Drachman St., by grading, constructing curbs, and laying 8-in. and 10-in. vitrified pipe sewers. L. A. Cowan, city clerk, G. H. Atchley, city engineer.

Cal., Santa Ana—Bids will be called for within 15 days for construction of Santa Ana outfall sewer system. Plans and specifications are being prepared under direction of City Engineer W. G. Knox. The \$321,000 bond issue for this work was purchased by Stephens & Company, Los Angeles.

Cal., Fullerton—City trustees have adopted a resolution declaring willingness of city to join with Santa Ana and Anaheim in constructing joint outfall sewer to ocean and treatment plant. A 42-in. main will be laid by Fullerton to the joint treatment plant and the city will pay 20 per cent of the cost of the joint works. Cost to Fullerton, about \$200,000.

Cal., Merced—An election will be held soon to vote on an issue of bonds in the sum of \$87,500, \$70,000 of which will be used for sewer purposes and \$17,500 for park improvements.

Waterworks

Cal., Compton—Ordinance No. 130, passed by city council, calls for the issuance of \$75,000 bonds for a water system for the city of Compton.

Cal., El Segundo—The \$200,000 bond issue for a municipal water system carried at a special election. The existing plant will be purchased and extensions and improvements will be made. Olmsted & Gillelen, Hollingsworth Building, Los Angeles, engineers.

Cal., Inglewood—A bond issue of \$217,500 for water development will be submitted in October; \$152,000 for new wells, pumping equipment, pressure mains, distribution mains and 100 fire hydrants; \$55,000 for acquiring 55 acres where pumping stations are now located and fencing same; \$7,500 for 2½ acres additional land.

Ore., Pendleton—Approximately \$22,000 in paving contracts have been awarded by the city council to the Warren Construction Company.

Cal., Santa Monica—City council has ordered the construction of a 6-in. sanitary sewer in portions of Pico Blvd., Bay St., Sixth St., and Eighth St., with flush tanks, manholes, junction chambers and other necessary structures; 1911 Act.

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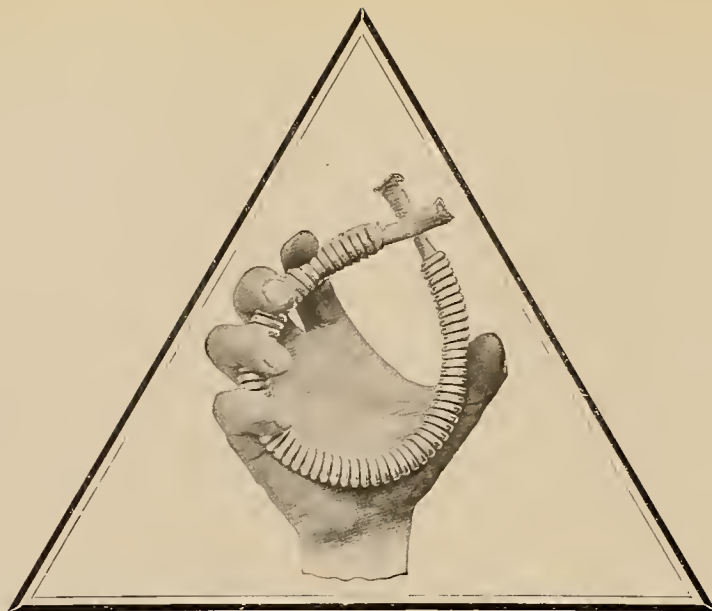
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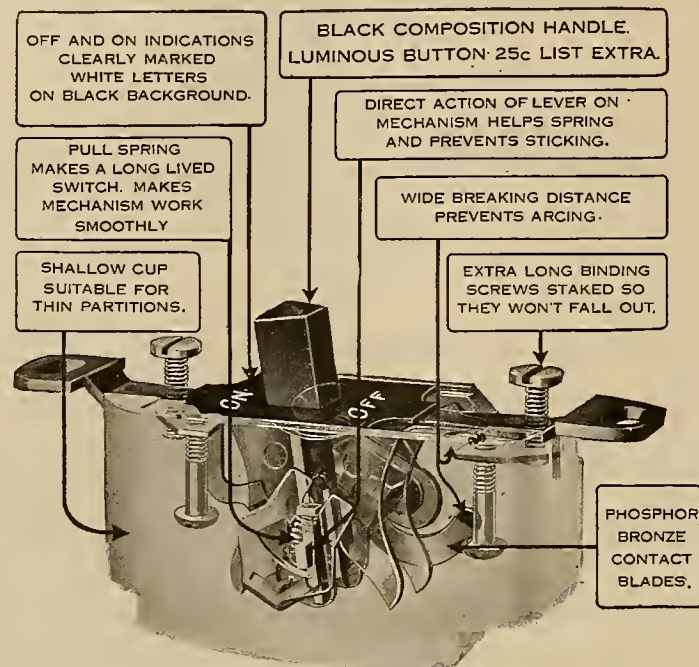
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3684	.88	H 3	* 25	5	■ For Four Switches	4 1/2	8 3/8	18
3685	1.10	H 3	* 20	5	■ For Five Switches	4 1/2	10	15
3686	1.32	H 3	* 20	1	■ For Six Switches	4 1/2	11 1/8	19
3687	1.54	H 3	* 15	1	■ For Seven Switches	4 1/2	13 3/8	16
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On the Threshold of Prosperity

CONSIDERING the distribution scheme in the light of history, one of the leaders of thought in the electrical industry of the West is of the opinion that the contention that electrical appliances should be merchandised only over the counters of the electrical dealer is unsound. He presents an interesting contribution, in another part of this issue, to the discussion of merchandising problems of the industry.

THE statement is made that the channels by which electric appliances are to reach the consumer were partially defined long before the word electric was ever associated with the range, the iron or the percolator. This is based on the hypothesis that the inclusion of an electric unit in these appliances, as well as in sweeper, washing machine or toaster will not influence the purchaser to buy from an electrical specialty dealer unless this dealer can demonstrate that technical training and specialized service place him in a better position to fill the order.

THE following pertinent comment is also of interest: "This has been called an electrical age. It is not. It is merely the dawning of such an age. As such it is filled with

transitions and weighty problems." Indeed, it is both a dawning and an awakening. The tremendous possibilities for commercial expansion in merchandising have so fired the imaginations of electrical men that these weighty problems are being attacked with determination.

IN the words of a national contemporary, "Commercial evolution in the electrical industry has been unique, for it has reversed the usual sequence. In a word, the electrical business has been built backward. Most industries have originated with barter and trade and have progressed from the cottage stage into larger and larger production to meet growing demand which has been developed by selling activity and an increasing popularity. But the electrical business began with large-scale production. The industry at last is constructing a commercial organization and a commercial purpose on a more adequate scale, with the attention of the manufacturer, jobber, contractor-dealer and central-station executive focused on the common objective. In short, the long-neglected sales department of the entire industry is being built up into balance with the other two fundamental elements of production and finance."



Regulations Hampering Use of Radio By Power Companies

ONE of the most useful applications to which the radio telephone has been adapted is for purposes of emergency communication of load dispatchers in generating stations in case of failure of pole line telephones. Western power companies are all alive to the possibilities of the radio telephone for emergency system dispatching; and when conditions are right and the way is clear, considerable use will undoubtedly be made of this method of communication.

Were it not for certain existing government radio regulations, the problems relating to radio telephone operators or operating personnel would be quite simple. While there is no particular difficulty attached to the procuring of station licenses or the allotment of wave lengths for this class of communication which comes under the limited commercial classification, the operator's requirements are somewhat stringent, being originally intended for operators of radio telegraph stations.

Proficiency in the telegraph code is required, as well as an examination in both theory and application of radio telegraph apparatus, before an operating license can be secured. The imposition of these requirements on a telephone operator does not seem warranted, and it would seem that a revision of the requirements is advisable. The suggestion has been made that the private use of the radio telephone for emergency dispatching on power systems could very well be handled by licensing one competent engineer to have complete supervision over the licensed stations of his particular system.

It is to be hoped that in the interest of public service some provision will be made to permit the more general use of the radio telephone for dispatching purposes, as well as for communication with remotely situated construction camps.

The German Patents and Electro-Chemical Development

THERE is no question but that American development in chemistry has not kept pace with the corresponding development in mechanical, electrical and civil engineering lines. Particularly is this true in the far West. With abundant resources of power and vast raw materials for electro-chemical manufacture, the West today stands in the awkward position of being the most backward in the development of its latent chemical resources of any section of this country.

Recent discussion and proposed legislation in the halls of Congress has had for its objective the legalizing of a movement to have the German chemical patents and other properties lawfully sequestered and sold to Americans during the war period, returned to their former owners. Thoughtful men see in this movement a well laid plan by certain foreign interests to get these patents back into Germany's hands so that she can resume her monopoly of the chemical industry in the United States. It is to be hoped that this matter will be handled with

sufficient vigor to prevent the patents from again coming under German control. Every possible thought should be given to this matter, for, in the far West the future of electro-chemical development, although this development is at the present time in embryo stage, will some day be of rare value to this section of the country.

Organizing a Curbstone Contractors' Association

AS a partial solution of the problems facing the electrical contractor, the Electrical Service League of British Columbia has organized the small residence wiremen of Vancouver and vicinity for the purpose of educating them in proper business methods. It is hoped by this plan to lessen the evils of competitive warfare, characterized by price-cutting and cheap and inadequate installations which have demoralized the electrical contracting business.

The League holds that the ambitious journeyman seeking to succeed in business for himself fills a definite place in the industry, and that once educated in proper business methods he will cease to be a menace. After attempts to induce the smaller wiremen to become members of the existing contractors' organization had failed, the League organized a separate organization composed entirely of "curbstoners." This organization, known as the Electrical Contractors' Association of British Columbia, has been in existence six months and is reported to be accomplishing its purpose.

This action on the part of the Electrical Service League is being watched with interest throughout the West, as the cut price and inadequate electrical installation is by no means confined to British Columbia.

The Joint Committee and the Society for Electrical Development

MEN of the electrical industry in the West have watched for some months past the efforts that have been made to co-ordinate the development activities of the electrical industry in a national way. While the West has always been and should be more concerned with its local cooperative problems, still it must not be forgotten that the West is vitally interested in national problems. The movement to co-ordinate the association activities by the appointment of a Joint Committee for Business Development, thoroughly representative of all phases and activities of the electrical industry, was a wise move. On another page of this issue may be found a news item telling how the co-ordinating of the activities of the Joint Committee for Business Development with those of the Society for Electrical Development is to be brought about. The Society has in past years rendered able service as a stimulator of local activities throughout the country. The West should do its share in joining in this movement of co-ordination of effort. It is constructive and for the best interests of our industry.

The New Industrial Program Under the American Plan

THE American Plan as worked out and established by the Industrial Association of San Francisco, and discussed elsewhere in this issue, is predicated upon the proposition that the public interest in labor controversies is paramount to that of any individual element. Recognition is given to the fact that the public interest is equally jeopardized by conditions of employment which give opportunity for employers to deal unfairly with labor, as it is by unfairness of working agreements insisted upon by unions in dictating policies which handicap the employer and prevent industrial development.

The Industrial Association has set up machinery for reasonable control of these matters in the interest of the public, the employee and the employer.

Briefly, this is the American Plan as established and enforced in the building industry of San Francisco, by the Industrial Association. It has freed labor from the self-imposed but misconceived restraint of selfish leadership, has emancipated employers from the control of unions, and has guaranteed to the public, to labor and to the employer that all their legitimate rights will be protected at all times.

The work that the Industrial Association has undertaken and for the past year successfully carried out, is of vital importance to San Francisco and the state of California; and, by way of example, to the whole country. It is particularly of interest to the electrical industry, for the influence that increased building activities have upon the electrical industry is too obvious to need more than passing mention. It goes without saying that the construction of more houses, more factories, more stores and more office buildings, naturally means the further use of electrical energy, and electrical equipment and appliances of every kind. Consequently, the electrical industry of the country cannot but be interested in the Industrial Association which took a virtually moribund industry in San Francisco and so revived and revitalized it that the value of building permits for the first six months of 1922 was more than 107% in excess of the value of such permits for the first six months of 1921.

Meeting of Electric Leagues at Association Island

UNDER the auspices of the Society for Electrical Development, Inc., a recent meeting was called for representatives of all electrical cooperative and development leagues throughout the nation to meet at Association Island in Lake Ontario. This meeting was successful in every detail and most of the western states were represented. This is the first movement of its kind ever inaugurated to get together representatives from these local activities, and much good was accomplished. It is not until one has traveled afield and has seen what the other fellow is doing, or has heard discussions of how problems

similar to those in his local community have been tackled and solved, that one can really appreciate the good that always results from meetings of this sort.

It is quite well agreed at the present time that co-ordinated effort on the part of the entire electrical family in a community is essential to success in any movement for the greater merchandising of electrical ware. At the same time the benefit of nationally co-ordinated effort, which finds its highest function in standing ready to assist in matters of broad general policy and statistical research without assuming managerial control, should not be overlooked. The good from informal conferences of this sort which has just taken place at Association Island cannot be overestimated.

Anent Habit of Assimilating Food Prior to Organization

WHENEVER problems besetting the welfare of an industry become especially vexatious, someone is bound to raise the clarion cry, "Let us get together." "By all means," replies the individual, "But how?" "Simple as one, two, three," replies the experienced organizer. "First, you have a banquet. Everybody comes in a hard-boiled shirt and a waiter's uniform. Then you get a lot of speakers who tell you a lot of things you never knew before, like 'United we stand, divided we fall,' and 'In union there is strength.' You listen, smoke one more cigar than is your usual post-prandial custom, discover that there are a lot of good fellows in the same line of business as yourself, and go home to friend wife, secure in the feeling that organization is the salvation of industry."

Seriously, does one banquet to achieve organization, or organize in order to get the banquet? Let us eat, drink, and be merry, for tomorrow we will probably have a headache, if our host forgot to strain the splinters out of the grape-juice. In truth, if the worm is a necessary adjunct to the hook, the banquet must perform just as useful a function in getting people to pull together. If one should not take a long walk on an empty stomach, why should one reasonably be supposed to bear a long sit under the same conditions? Josh Billings said, "Most peoples branes is located in their stummix," and, if he was right, that must be the proper point of attack for the successful institution of any joint effort.

Some day, a great genius will write a treatise on the psychology of the gustatory nerve. In truth, it is the easiest way to bring people to your way of thinking, now that Mr. Volstead has robbed the propagandist, the promoter and the salesman of the one time first aid in putting deals across. When the bride has learned that by "feeding the brute," the size of the bill for that winter hat shrinks to a mere nothing, she is well along in the achievement of matrimonial success. So it is with the promoter. He could no more launch a scheme for joint action on any subject without a banquet with trimmin's, than the Israelites could make bricks without straw.

Western Comment on Current Events

Editorial Notes and Readers' Views on the Outstanding Aspects of Financing, Trade Promotion, Legislative and Associated Topics that have a Special Bearing on Western Business

The plant of the Hammond Lumber Company at Astoria, Ore., was recently destroyed by fire entailing a loss of approximately \$1,000,000 and throwing

500 men out of employment.

Fire Greatest Menace to Lumber Industry The disaster suggests that more effective means should be found to prevent sawmill fires. It is

one of a dozen fires which have occurred in the mills of the Pacific Northwest during the past summer. Seemingly, fires in sawmills are considered a matter of routine in a lumbering season. Although a mill be totally insured, the frequency of such fires makes the premiums high, and the payment of insurance money cannot compensate for the stoppage of a great industry and loss of employment to hundreds of men. In the case of the Hammond fire, the loss was only partially covered by insurance.

In connection with the fire, it is interesting to note the steps taken by the Pacific Power and Light Company to meet the emergency brought about by the destruction of the mill generating plant which furnished power to that company for distribution in Astoria and the surrounding district. The large expenditures for a turbo-generating stand-by station erected two years ago were fully justified and except for a two-hour interruption occasioned by the starting up of the big station, the customers did not suffer.

To return to the question of the fire, steps should be immediately taken for the instituting of an educational campaign to combat the immense losses which the lumbermen sustain each season, caused in most instances by preventable fires.

Engineering work has become an increasingly important factor in the progress of civilization and the welfare of the community. The engineering

Code of Ethics For Practice of Engineering profession is held responsible for the planning, construction and operation of such work, and is entitled to the position and authority which will enable it to discharge this responsibility and to render effective service to humanity.

In this connection, the members of the American Society of Mechanical Engineers will shortly vote upon the adoption of a code of ethics covering the practice of the engineering profession. Engineers are occupying important positions in human affairs and the code of ethics is significant of the high ideals which actuate the practice of their profession. The code to be voted on follows:

1. The engineer will carry on his professional work in a spirit of fairness to employees and contractors, fidelity to clients and employers, loyalty to his country and devotion to high ideals of courtesy and personal honor.

2. He will refrain from associating himself with or allowing the use of his name by an enterprise of questionable character.

3. He will advertise only in a dignified manner, being careful to avoid misleading statements.

4. He will regard as confidential any information obtained by him as to the business affairs and technical methods or processes of a client or employer.

5. He will inform a client or employer of any business connections, interests or affiliations which might influence his judgment or impair the disinterested quality of his services.

6. He will refrain from using any improper or questionable methods of soliciting professional work and will decline to pay or to accept commissions for securing such work.

7. He will accept compensation, financial or otherwise, for a particular service, from one source only, except with the full knowledge and consent of all interested parties.

8. He will not use unfair means to win professional advancement or to injure the chances of another engineer to secure and hold employment.

9. He will cooperate in upbuilding the engineering profession by exchanging general information and experience with his fellow engineers and students of engineering and also by contributing to work of engineering societies, schools of applied science and the technical press.

10. He will interest himself in the public welfare in behalf of which he will be ready to apply his special knowledge, skill and training for the use and benefit of mankind.

There are in Japan a total of 1,126 sites available for hydroelectric development representing a minimum of 3,520,000 hp., according to the results of a

Survey Shows Available Power Sites in Japan survey conducted by the Department of Communications. The

survey lasted over a period of four years and the results are being compiled at the present

time. It is expected that complete data on every developed power site and on every available site will be in the hands of the government when all of the data are tabulated.

The survey shows that in Japan there are eight rivers, the total potential power of each of which is 100,000 hp. There are only 68 sites which have over 10,000 hp. available. The number of small sites is by far the greatest.

While various surveys have been conducted by different governmental agencies in this country, there is no compilation as complete as the one which is being prepared in Japan. Surveys have been made as to the amount of power available on the various streams and the potential hydroelectric power in each of the states. As yet there has been no listing of all of the available sites and their possibilities.

Of course, it is to be remembered that Japan is a comparatively small country, with few large waterways, easy to survey, while in America the work entailed in such an investigation would be enormous. On the other hand, the government possesses all of the facilities for making such a survey. There is no question as to the value of such information.

The unification of twenty financial institutions in southern California under the head of the Los Angeles Trust and Savings Bank has developed to the point where a new title has been adopted for the institution in keeping with the territory it serves. Henceforth the group will be known as the Pacific-Southwest Trust and Savings Bank, a title descriptive of the territory served, which embraces cities from Fresno to the Mexican border.

In creating the recent merger an attempt was made to so co-ordinate banking institutions in the principal districts that complete financial assistance might be given in the seasonal marketing of crops. By this merger money returned to the Pacific-Southwest in the spring from the sale of the orange crop of southern California can be used for financing the raisin crop in the San Joaquin Valley. Money obtained in the fall from the marketing of raisins is available for the early vegetable grower of the Imperial Valley. Similarly the diversity of seasonal movements of other products results in the elasticity of bank credits, and this elasticity in turn results in additional service to the various communities.

In the area in which this merged institution carries on its activities directly, the products—agricultural, mining and manufacturing—are harvested and marketed in such seasons that it will make substantially a continuous use of credits and flatten the curve of peak demands to the minimum. This gives a more economic use and co-ordinates the funds within the area to the advantage of all concerned.

The question of electric rates is one of the strong connecting links between the power company and the public. The consumer is always interested in what he is going to pay for his electricity.

Ontario Rates Increased by Commission

That has been one of the reasons for the establishment of railroad and utility commissions. When rates go up, the utility companies are condemned. When the reverse is true, then the companies are public benefactors.

In connection with the forthcoming election in California when the people will be asked to ratify an amendment which would turn one of the most orderly and well regulated industries in the state into chaos, much has been said of the Ontario Power Commission for it is the only organization with which a comparison could be made. Much has been

said regarding the activities of the commission and its policies. Proponents of the California Water and Power Act have pointed out the seeming good points of the commission while opponents of the measure have shown its weaknesses.

It is interesting to note that just at a time when electric rates have been reduced in California, an announcement has been made of increases in Ontario. News dispatches from Hamilton state that the rates for that city have been raised from \$16 to \$20 per hp-yr., representing an increase of 25 per cent. Moreover the increase is retroactive, applying to all bills from Jan. 1, 1922. The increase adds an additional \$80,000 per year to the bills of the consumers of Hamilton. There is no change in residential lighting rates, other than to raise the minimum from 50 to 75 cents. Commercial lighting, street lighting and power consumers bear the brunt of the increase.

In displaying the two electrical homes in Seattle during the week of Sept. 22, the Electric Club of that city enlisted the aid of civic officials in making the occasion one of the most noteworthy of the year. By proclamation Mayor Edwin J. Brown set aside that period as "Seattle Electrical Week," calling attention to the development of hydroelectric power and the important place electricity takes in the everyday life of the people. The mayor's proclamation follows:

Electricity is one of the greatest natural economic resources of the Pacific Northwest. It is a new and a tremendous force which has come into our economic and domestic life in the last generation. It turns the wheels of our mills and factories; it irrigates and brings into fruition much of our desert land; it lifts the treasures from our mines; it carries our voice over a wire from ocean to ocean at a speed greater than that of the sun; and it enables us to talk through the air across the seas. It gives us dependable urban and interurban transportation, thus quickly relieving the congestion of our cities by enabling our workers to get quickly and cheaply to a house in the open air; it adds more than 50 per cent to the efficiency of our single track mountain trunk lines, and it lightens the burdens of the home by replacing the old, back-breaking methods with their drudgery, with the comfort, convenience and efficiency of the modern electrical servants.

Electricity is a permanent factor in our existence. The state of Washington leads the entire country in potential electric energy. The engineering feats here in the West in electrical development are surpassed nowhere on the globe, and, though the fuel supply is diminished year by year, this great force of nature goes on forever.

The City of Seattle is in the center of a vast supply of this valuable resource and it will be a big factor both in promoting our future economic development, in relieving much of the irksome toil of the home and in adding to our general comfort.

For this reason I hereby proclaim the week of Sept. 22 to 29 as "Seattle Electrical Week," during which the people of Seattle, both individually and through our various organizations, may learn more of the development of this new science. The Electric Club of Seattle is preparing two modern electrical homes whereby they will demonstrate how a house may be properly wired for the convenient use of electrical appliances and how these electrical servants may be added to our home comforts. Let us benefit by this splendid educational movement.

Letters to the Editor

Broadest Distribution Channels Best For Growth of Entire Industry

To the Editor:

Sir: The distribution of any article or commodity from the manufacturer to the consumer is closely linked with its history. Similarly, the channels of distribution depend largely upon this history and human nature. The so-called electrical household appliances are no exception to this rule. A consideration of the history of the electric iron reveals that it is simply a new edition of the old-fashioned sad-iron brought up to date by the inclusion of an electrical unit. By the same hypothesis, the vacuum cleaner is a modernized carpet sweeper. It does not require a study of archeology to trace the development of the electric range, beginning with the open fire of prehistoric times and concluding with the gas range of today. The evolution of any of the other electric appliances is analogous to any one of the above cases.

Considering the distribution scheme in the light of history, it is evident, that the statement that electrical appliances are to be merchandised only over the counters of the electrical dealer is rather extreme. The channels by which such articles are to reach the consumer were partially defined long before the word electric was ever associated with the range or the iron. It is also apparent that if electrical household appliances are to achieve the universal use and popularity which seems to be their lot, the channels of distribution cannot be defined by such narrow limits. The natural tendency of the housewife in purchasing an electric iron would be to seek out the hardware merchant from whom she formerly purchased her sad-iron unless the electrical dealer can show her some reason why she should make the purchase from him. Nor will the enterprising hardware merchant hesitate to stock his shelves with the latest development in irons because the magic word "electric" has been applied to it. Should he fail to keep abreast of the times, his business would soon reflect the loss of the profits he had hitherto considered legitimately his. However, it has been surprising to note how reluctant the hardware merchant has been to adopt this policy. Times are changing and he is being urged on all sides to enlarge his activities to include an electrical department.

The electric curling iron is primarily a toilet article. Will the woman who has gone to the drug store or the department store for a new curling iron in the past, seek out an electrical dealer now that the curling iron can be attached by a cord to a lamp socket or a wall plug? The answer is self-evident unless the electrical dealer can show her that his technical training and specialized service place him in a position to better fill her order. The same arguments apply equally well to the electric washing machine, the vacuum cleaner, the percolator and a host of other appliances.

The indictment of the electrical dealer for his seeming lack of success in the merchandising of electrical appliances assumes a new aspect when viewed in the light of the foregoing facts. But the fault has not been entirely his. Profits have been small, turnover slow and the response of the public to the educational campaigns, sponsored by the industry, less ready than has been hoped. The methods of improving these conditions are under consideration at the present time and are outside the scope of this discussion.

Preachments are never popular, but two factors which have been overlooked by the dealer in strengthening his place in the distribution scheme might well be called to his attention. In the first place, he has failed to realize the possibilities of stocking his shelves with articles which, although entirely disassociated from the electrical idea, would have attracted custom to his store, swelled his volume of sales and increased his profits. Instances can be cited where electrical dealers have taken on specialty lines which have not only been profitable in themselves, but which have also aided in the merchandising of appliances by attracting prospective buyers to the store. Again, the dealer has failed to utilize the opportunity for developing sales afforded by the customer who enters his store bent on the purchase of some small article such as a Mazda lamp or a fuse. Hundreds of dollars from prospective sales fail to reach the cash register because no effort is made to interest such customers in some appliance at the time they are in the store. By purchasing a fuse or a lamp they indicate that their homes are wired and that they are prospective customers for some labor saving appliance. Yet it is seldom, that the salesman who fills their order even attempts to gain their interest.

It is not to be assumed from this discussion that the central station, the jobber and the manufacturer are not fully in accord with the dealer and his problems. The four branches of the electrical industry are closely interlinked. Their interests are mutual. All have participated in the campaigns which have brought electrical appliances to the fore. Each is familiar with the problems of the other. The jobber, the central station and the manufacturer all are as desirous of having the dealer become a successful merchant as he is himself. On account of the close relationship which has existed between them and which will continue to exist, they feel that his is a logical place in the distribution scheme.

Electrical dealers are prone to accuse the jobber of attempting to extend his business into the hardware and other fields, little realizing that the hardware merchant will naturally turn to his own jobbers for such electrical equipment as he wished to add to his stock. They forget that the dealer's problems are inherently the jobber's problems and that the dealer's success is the jobber's success.

However, the time has come when it must be admitted that there will be other distributing agencies than the dealer. Electrical appliances are gaining in popularity and they will continue to do so. And as this popularity grows so will the merchandising possibilities. A new and aggressive type of merchant will be attracted to the field. New manufacturers will spring up, whose chief problem will be

that of distribution. If the present distribution channels cannot absorb their goods, then they will open up new ones. There will be competition and the electrical industry as it is constituted at the present must hold its own.

This has been called an electrical age. It is not. It is merely the dawning of such an age. As such it is a period filled with transitions and weighty problems. If the electrical industry will face squarely the facts as they really are, it will find that there is an infinite amount of good business in store for all.

September 18, 1922.

[Editor's Note: This represents the opinion of one of the leaders in the electrical industry on a subject which is of vital importance.]

Laundryowners Feel That the Electragists Are Their Worst Competitors

To the Editor:

Sir: Recently it has come to the attention of the members of the electrical industry that laundry owners and operators consider central stations and electric appliance shops their principal competitors. An explanation of this feeling that the electrical men are competitors of the laundrymen may be interesting to your readers.

The laundrymen do not think that the public utilities are "taking in washing" or that the electragists are establishing laundry routes to the disadvantage of the men in the business, but according to the August issue of the National Laundry Journal, the official organ of the Laundryowners' Association, they are carrying on "insidious activities as a group and doing more to undermine the laundry business than any other thing."

Exposition was given to this situation by one of the Denver newspapers in a campaign inaugurated to break an alleged monopoly and combine of the larger laundry owners in that city. According to the paper, the uncovering of the situation in Denver developed as the result of investigations in other large cities and although as far as is known no active campaign has been started by any individual owners or local groups against the electrical industry for its manufacturing, selling and servicing of home laundry equipment, it is apparent that the article "Are Public Utilities Your Competitors?" voices the policy of the national organization.

Undoubtedly this matter will come up for further discussion at the national convention of the organization at Houston, Texas, October 2-7.

The article in question quotes at length the letter of a laundryowner on this matter and although apparently not intended as an editorial, it compliments the author of the letter on his plain speaking and in telling the whole truth—"Because he believes that to avoid a difficulty is merely to postpone the time when he may wake up some fine morning to find a wrecked business"—and so he accepted the invitation to tell the laundry industry what he thinks to be "The Truth About Home Electrical Laundry Devices."

Further comment made by the laundryowner in his article follows, in part:

"Because they are leaving no method of persuasion unused, the manufacturers of electric washers, electric driers, electric flat work ironers and washing supplies, are causing many housewives to believe that they should use these products. In their advertising, the family washing is shown as being done by the housewife as she reads a book or while the children play about in the scene, with everybody all smiles. With a clever combination of sunshine and chirping birds, the otherwise burdensome household duty is shown to be quite an enjoyable affair.

"Look through any of the women's magazines. You will find them containing many advertisements and special articles depicting in words and pictures the excellent properties of domestic laundry equipment. You cannot refrain from looking at the advertisements for they are usually representative of the highest type of the advertising art.

"When you consider the millions of women's magazines being scattered broadcast throughout the country carrying similar messages into practically every home, then you can see something of the magnitude of the campaign.

"This activity does not merely end with advertising, however. It is more than an advertising campaign—it is a selling campaign. Suppose you reply to one of the advertisements and ask for a copy of a booklet on 'Expert Laundering Advice' or some similar subject. In this way the name of a 'prospect' is obtained for the manufacturer and as fast as the mails will permit, you receive your booklet attractively printed in eye-arresting colors and steeped in resounding advertising claims. But along with your booklet in the same mail was a letter from the advertiser to the local representative which finally results in your being called upon by that person. You are now in personal contact with a persistent sales-person, trained in the art of meeting your every objection. If the 'prospect' is a customer of your laundry you would be surprised, indeed you would probably blush, should you chance to hear what is said about you and your laundry.

"The housewife now having been told of the 'waste of money' and the outrageous destruction and loss of your personal belongings, by sending them to the laundry, has placed the 'prospect' in a receptive frame of mind. Thus it is easy to permit the dealer to place a machine in the home on trial. Then rather than cause them the trouble of taking the machine back and hoping that the claims of the salesperson will prove correct, the 'prospect' is 'sold' and your customer is gone.

"This is not all I have learned in meeting this form of competition in my own city. Until recently I thought my only actual competitors were the other laundries, three in number. But I have come to find that the electric shop and the electric company from which I purchase power are my most formidable competitors, for they have their own business to push—the sale of electricity using devices. They want to sell them because they use power at the time of day when the use of current is at a rather low ebb.

"My competition is more extensive than I imagined. I have as competitors nationally advertised and marketed products, which have elaborate sales organizations, my local gas and electric company, electrical appliance shops, and not the least of them are the grocery stores selling widely advertised washing supplies."

S. W. BISHOP, Executive Manager,

Denver Elec. Cooperative League.

Denver, Colo.

Sept. 8, 1922.

RADIO BULLETINS

The Journal of Electricity and Western Industry broadcasts a special industrial and business news report each Monday night at 7:30 o'clock from San Francisco. This report is broadcasted from station KLP, operated by the Colin B. Kennedy Company at Los Altos, California, on a wave length of 360 meters.



IN the high Sierras, where the Southern California Edison Company is impounding the snow waters in a chain of four lakes which feed a series of power houses located along the Big Creek-San Joaquin River Gorge, the snow lies from fifteen to thirty feet on the level among the giant forest trees, the shadows of which retain it until late in the summer. The inset picture of the tunnel shows where

part of this year's record appropriation of twenty-one million dollars is being expended by this company to meet the power demands of the future. The entire project, of which this thirteen-mile tunnel through the crest of the Sierras is a part, embraces the development of a million and a quarter horsepower of electrical energy which will be transmitted two hundred and forty miles at 220,000 volts.



Group of students in San Francisco Industrial Association's Training School for Plumbers being shown how to read plans. Students alternate between two weeks of intensive training in the school and four weeks on jobs or in the shops of master plumbers. Within a year these men are expected to be full-fledged journeyman plumbers.

San Francisco Moves for Industrial Peace

By WARREN H. MCBRYDE
President of Industrial Association of San Francisco

ANY attempt to eliminate the evils that have crept into our industrial relations in the past and which exist in the present order of things, certainly will appeal to all of those who have not lost their optimism and confidence that a better era is ahead of us. Any such attempt is looked upon with interest and favor, especially if it is founded on facts and is growing out of conditions that are humanly right and industrially sound in principle. With such a premise we can safely feel that the desired results will sooner or later be accomplished. This can not all be accomplished in a day or a year, just as no war is won with only one battle; but, if out of each conflict we find that we have ascertained the cause of the trouble, and through a better understanding are able to remove the cause and establish measures which will prevent a recurrence, we can at least feel that we are on the road towards that better day.

No great amount of progress, however, can be achieved when any one or two of the three elements which make up our industrial life, profiteer at the expense of one or two of the other elements. Just so long as the employee or the employer, or, both

together, profiteer at the expense of the public, the condition is not sound, and can expect to prevail only for a limited time. Furthermore, any movement to bring about better conditions must be a fight upon issues in which all three elements, the employer, employee and public, enjoy the greatest benefit.

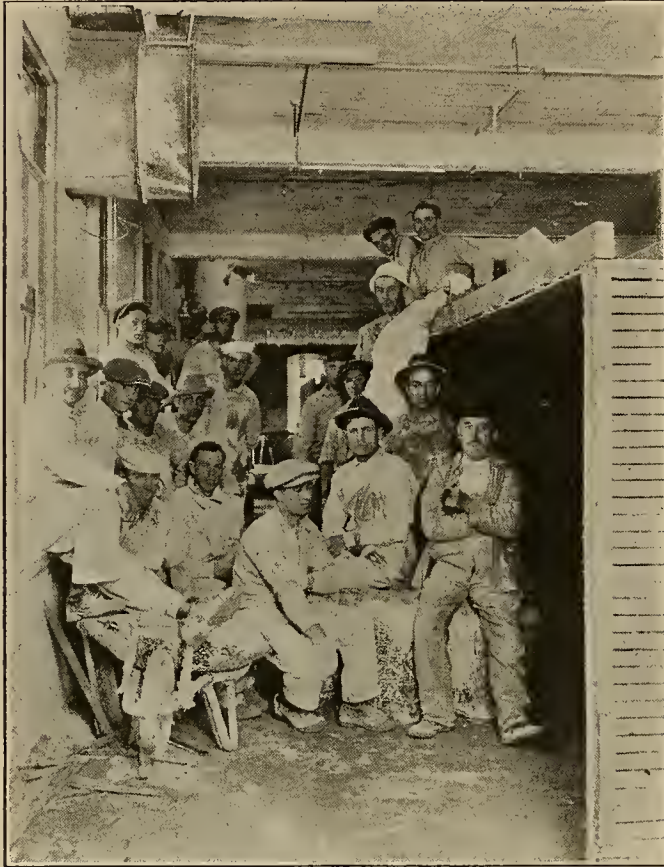
The representatives composing these three elements must be not only determined in their purpose, but must be sincere in their endeavor, and must have the confidence and respect of the people they represent and the community in which they live and work.

Much could be said regarding the industrial conditions which have prevailed in San Francisco during the past twenty or twenty-five years; a history in which has been written many serious strikes and the attending inevitable waste, bitterness and suffering, to say nothing of the financial loss that had to be borne by the employee as well as the employer. It will be sufficient to state, however, that a condition of business stagnation and industrial strife prevailed in San Francisco early in 1921. To men of vision this condition brought an idea that some form

of organization was needed to find and remove the cause of industrial strife, in the crisis presenting itself at that time and in any future disputes which might arise.

Forming of an Association

This idea—prompting a real, practical effort—to find and remove the cause of industrial strife, has been objectified in the form of an organization called



Making competent journeyman plasterers in a year is the aim of one of the trade schools established by the Industrial Association of San Francisco.

the Industrial Association of San Francisco. It was born at a time when the building industry of San Francisco was prostrate as the result of a strike of the members of all the building trades unions; a strike which public opinion was not slow to condemn because it was called by the union officials when a wage award, which they had agreed in writing to accept, became effective. Several months previous, a demand by the unions for a wage increase had led to the appointment of an arbitration board, the personnel of which was acceptable alike to the unions and the building contractors, and the award of which, it was agreed in writing by both parties, should be accepted and carried out.

In March of 1921, after four months of public hearings and other investigation, this board, consisting of a Catholic Archbishop, a former Justice of the Supreme Court, and a recognized industrial expert, made a wage award, effective for six months, reducing wages seven and one-half per cent. It was when this award took effect that the union members struck, despite the fact that they had made a written agreement to accept the award. The fault,

of course, lay with their leaders who not only refused to keep their agreement, but obstinately declined to participate in proper endeavors to reach a compromise.

I do not propose to waste space in piling up blame upon the unions. Neither do I propose to deny that the contractors were actuated by anything but ordinary human motives. They would have preferred to have "given in" to the unions, and then passed the increased cost of building along to the public. That would have been much easier and simpler, but by a growing refusal to build, the public had shown that it would not tolerate a continuance of this "cost passing" policy.

It was at this time, when matters were at an impasse, that the Industrial Association was born, and thus the first task presenting itself was that of rehabilitating the building industry. This was accomplished by bringing in workers from all over the United States—avoiding professional "strike breakers" as far as possible. It speaks eloquently for the character and good sense of the strikers that during all this time, while outside workers were filling available jobs, there was no serious violence. The rank and file of the men in the building trades unions of San Francisco evidently are men above the average in intelligence, and of rather broader understanding and viewpoint than might be expected. They are the type of men that given an intelligent, unselfish leadership—which unfortunately they too infrequently have had—would elevate the idea and promote the cause of trade unionism in the public mind everywhere. Indeed, it was probably the existence in them of these characteristics that finally led them to repudiate their leaders' advice, and abandon their strike.

Up to the time that the union men abandoned their strike, there had been nothing unusual to characterize the activities of the Industrial Association, and one might have been justified in believing that it was or would become a sort of autocratic employers' association, created incidentally to break a strike but mainly to destroy trades unionism. However, when the real test came, it gave prompt and emphatic evidence that it was not such an organization and had no such intention or desire. As soon as the union men voted to abandon their strike, the Industrial Association invited them to return to work at the wage scale fixed by the arbitration board and with positive assurance of immunity from discrimination of any sort. They were not required to forswear allegiance to their respective unions, and the only condition imposed was that they should abide by the rules of the American Plan.

Provisions of the American Plan

I am reminded that perhaps the popular conception of the American Plan is of something anti-union and little else. Possibly there is justification for such a conception, but not as this plan has been applied in San Francisco. As applied here, and enforced by the Industrial Association, it provides:

(1) The right of any person to seek, secure and retain work for which he is fitted, and the right of the employer

to engage or dismiss employees, should not be abridged or denied because of membership or lack of membership in any organization or association of any kind.

(2) Efficiency in industry. This should be created and maintained to enable our enterprises to cope with those of other places. Superior skill and industry in work should be permitted to earn an adequate reward. The establishment of this principle, however, is not to be used to reduce the earnings of a less able man below a fair return for the work done. No artificial limit or restriction should be placed upon the normal production of any man or upon the use of an appliance, invention or other means to increase output, always having due regard for the health, safety and well-being of the individual.

(3) The right of management is inseparable from responsibility for industrial results. Therefore the right of the employer to engage or dismiss men individually on merit must not be circumscribed; the right on all occasions, however, to be exercised only upon broad principles of justice, and with a recognition of the obligation on the part of management to cooperate with the employee in securing so far as possible continuous employment.

(4) No understanding should be reached between employers and employees that ignores the public interest, and no agreement should be tolerated that is illegal or contrary to sound public policy, whether made between employers themselves or with their employees or others.

Successful Trial of the Plan

The union men returned to work, and as this is written, all except two crafts have been working for nearly twelve months without complaint, under the American Plan. The exception is in the case of the bricklayers and plumbers. The former struck on April 5 for a dollar a day wage increase, and the plumbers struck a week later, giving as their reason that their by-laws forbid them working with non-union men, something which they had been doing, however, for eight months without complaint. These strikes have impeded building operations only slightly as men willing to work under the American Plan have taken the places of the strikers.

No complaints have come from any other of the building trades crafts, and all the thousands of building trades workers, save about 125 union bricklayers and something like 350 plumbers, appear to be satisfied with the American Plan. They should be, indeed, for although wages are not now quite as high as during the war, the margin between wages and the cost of living is greater now than it has been at any time since 1913.

Now let us see what the Industrial Association has been doing, during its year of existence. The first thing it did, after effectuating the American Plan, was to create an impartial wage board. It believed that to stabilize the building industry there should be a fair wage scale, guaranteed. Accordingly, it secured the services of three of the city's most prominent men, men not only of high character but of ability and vision as well. Sitting as an impartial wage board these men conducted public hearings at which representatives of all interested parties were heard, and otherwise prosecuted a diligent and impartial inquiry for a period of three months, and then fixed a wage scale to obtain for the calendar year 1922. This scale has been in effect approximately nine months without complaint except from the 125 striking bricklayers, which is very good proof of its fairness to workers and employers alike.

The Association next turned its attention to

apprentices. Through an extensive survey it had discovered a nation-wide shortage of plasterers, and plumbers. In these crafts far too few apprentices had been allowed by the unions, while the contractors for reasons generally unknown had not utilized even the small number of apprentices that the unions had permitted. Now, however, this has all been changed. The contractors are cooperating



Student plumbers laying out the plumbing for a model bungalow erected in the school shop. The Industrial Association is conducting these trade schools to train men to relieve the shortage of skilled craftsmen.

with the Industrial Association in its endeavor to train a sufficient number of apprentices in all crafts.

Schools to Train Craftsmen

Two schools to provide such training have been established by the Association and are proving a success in every respect. One is for plasterers and the other for plumbers, and both are absolutely free—even the materials being furnished.

In the plasterers' school, twenty-three have been graduated, and are now at work, and twenty-five, high class boys and young men, are now enrolled. Their training, embracing all branches of plastering, is in the hands of two skilled master plasterers, and continues intensively eight hours a day, five and one-half days a week, for twelve weeks. Then they are hired at once by master plasterers, and with a year's experience will be competent journeyman plasterers. Some now are getting as high as \$7 to \$8 a day after twelve weeks in school and one month on the job. In addition to possessing the usual physical qualifications, such as a certain weight, and height, all applicants for admission to the school are required to pass an intelligence test as to their general qualifications.

Seventy-five of those who sought entrance to the plumbers' school, passed the entrance tests and were grouped according to their test standing. Training of these students is by groups. The first group spent two weeks in the school and then went out on jobs for four weeks. While this group is out on jobs, each of the other two groups will spend two weeks in the school, and this arrangement will continue until each group has had a minimum of eight

weeks in the school and sixteen weeks of practical experience on the job. Within a year these students are expected to qualify as competent journeyman plumbers.

Under the old system of union-controlled apprentices, such few as were allowed were required to spend three or four years—a large part of it in prac-



San Francisco ex-service men learning to put on the "brown coat." Plastering in all of its branches is being taught by master plasterers in these trade schools.

tical idleness—in learning the plastering, plumbing and more important trades. The method introduced by the Industrial Association, on the other hand, besides being calculated to turn out better equipped craftsmen, effects a saving of from two to three years in the training period; a saving which is extremely important in view of the nation-wide shortage of skilled men.

As rapidly as possible, the Association expects to establish similar schools for the training of bricklayers, tile setters, metal lathers, painters, and possibly, finish carpenters; opening them in the order of the craft in which the greatest shortage exists. By so doing, it expects to be able to relieve the serious shortage of skilled craftsmen, as well as to give the most practical aid and encouragement to the American boy who desires to learn a useful trade.

The restrictive rules on apprentices in the building trades in San Francisco, which tended to make the supply of skilled men less than the demand, have been removed by the Industrial Association.

And, after all, is it not better to help to the fullest extent those of our people who find themselves out of employment or anxious to learn a trade at which they can enjoy greater remuneration for their larger efforts. The industrial population of other cities and towns is not thus disturbed by sending men from one city for use in another.

The importation of mechanics to meet the building boom is necessary at times, but the ability to train men and boys regularly to take care of such a situation, is certainly better and eventually must be considered as a necessary adjunct in any commu-

nity in taking care of the supply of mechanics required to meet the demand, and especially is this so in the building trades.

To protect every worker from discrimination and to insure the maintenance of the established minimum wage, the Association has a corps of inspectors in the field constantly. No attempt is made to prevent a contractor paying higher than the established wage to men of exceptional ability who are above the average—that is for him to do if he so desires; but he is not allowed to pay a wage a cent below the guaranteed minimum scale.

To prevent abuses of any sort, or to dissipate those which in one way or another may arise despite efforts at prevention, the Association maintains a special bureau, open at all times for hearing complaints. Here anyone, employee—union or non-union—a union agent as well as employer, is invited to lodge his complaint. It is investigated immediately and impartially and, if found justified, prompt steps are taken to remove the conditions out of which it arose.



"Caulking joints" in the school for plumbers. The school is entirely free, even the materials being furnished for the men desiring to become journeyman plumbers.

The Industrial Association does not pretend that it has found a panacea or that its program will usher in the millennium. Hence, it does not expect all industrial controversy in San Francisco to cease. But it does believe that by meeting such controversy at the source, the most and worst of it in fact, can be prevented.

The Industrial Association does not claim that it is entirely responsible for the unprecedented building activity which San Francisco has enjoyed in the past year, but the fact remains that the public generally is satisfied with the prevailing conditions. The investor is satisfied with building costs, employers have never had more business and the employees have never had such a prospect of continued employment.

The Case of "Jerry" the "Curbstoner"

By REY CHATFIELD

TERMS such as "curbstone contractors," "jerry contractors," "skinned job" and others are heard today whenever and wherever electrical men meet. The cut price, incomplete electrical installation, is of vital importance to the householder, to the manufacturer of electrical appliances and supplies, to the wholesaler and to the central station. Facing the facts we find that the electrical installation of today, particularly in the thousands of new residences which are being built, lacks the finish and completeness of the same type of installation of several years ago.

This is of grave concern to every branch of the industry because the potential market for electrical energy and appliances is not being properly developed. An incomplete electrical installation in a new home today, makes a difficult market for appliances tomorrow. An incomplete electrical installation, the housewife will find out tomorrow, is inconvenient and even expensive, but tomorrow is not today so she is satisfied with the cut price, incomplete installation, because of the fancied saving made in the original installation. Tomorrow she will find her error in judgment, but tomorrow will come too late. The purchase of the appliances that would have been bought for the new home will be postponed until "we can afford to have the wiring changed." The potential market has been temporarily destroyed.

What class of electrician is so short sighted as to destroy a future market for electrical appliances? The residence wireman or curbstone contractor. The so-called "curbstoner" may be roughly divided into three classes; the journeyman wireman with an honest ambition to succeed in business for himself; the journeyman wireman thrown out of employment some time ago, during the lull in business following the war; and the wireman, garage mechanic, carpenter or moving picture operator who is such an inefficient mechanic that he is unable to hold a job under any condition other than in an inflated era of building.

The "Curbstoner" as a Contractor

With practically no business equipment the "curbstoner" of the first class, the moment he accepts a contract, becomes the owner, manager, and employee of a business requiring both technical and commercial ability. Because his capital is small, the first job he tackles is a small one, in all probability a residence. Quite likely his estimate is close to the actual net cost of labor and material, but his lack of business experience precludes the possibility, if competition does not, of pricing this estimate correctly. Once started on the job he seeks by short cuts and elimination to make the profit he fondly hoped to make in order that his capital may grow and that he may be enabled to take jobs of a larger size. The result is poor workmanship and cheap materials, a "skinned job."

This ambitious little contractor because of his handicap both in experience and capital has to meet the competition of the second class of "curbstoner"—the journeyman wireman temporarily out of employment. He is accustomed to live on the wages he receives as an employee, working from three to five days a week. Perhaps his ability as an estimator is limited and he visualizes a job roughly, estimates the material and figures he can do the job in two days. His "estimating" mind functions something like this,—“Let’s see—there is about thirty dollars’ worth of material in that job and I can do it easily in two days—I’ll charge ‘em ten dollars a day for labor; that’s a lot more than I would make working for the Electric Shop. Let’s see,—thirty for material and twenty for labor—that’s fifty—H’m—Gee’, that seems a little high—I’ll just knock off five bucks. My price goes in at forty-five bucks.”

Appearance of the "Carpet Bagger"

Perhaps these two types of contractors compete for the same job and if that is the case, the second man gets the job. However, we have not reckoned on the competition of the third man. This man in British Columbia has been dubbed the "carpet bagger." The "carpet bagger" is unable to estimate a job, is a poor workman and not too honest. If he finds out the other fellow's figure he cuts under the low price just enough to land the job and by skimping and skinning the job he makes an effort to get wages out of his work.

It is not at all unlikely that the Electric Shop will put a figure in on the job just to show such and such a contractor that he is "on the job." After one such effort the legitimate contractor leaves the business alone, but the other three meet again and again, each trying to cut under the other fellow and so get the job. And eventually all three types of "jerry" contractors are working for less than a journeyman's wage and eliminating everything possible in an installation in an effort to "break even."

To Break Up This Competition

The legitimate contractors have sought to break up the competition of the "curbstoner" by meeting his prices and by cutting off his supply of materials. Both of these expedients failed of their purpose but they did create suspicion in the mind of the "curbstoner" and gave rise to the "pirate" jobber and so the cut-price wiring installation flourishes.

The "curbstoner" grows more and more suspicious of the legitimate contractor who is endeavoring to "freeze him out of business" and suspicious of his competitors who use faulty materials and do poor workmanship. The householder or homebuilder pays for this competitive warfare. This effort "to freeze him out of business," adds fuel to the fire of indignation raging in the mind of the second class of "curbstoner." The journeyman out of employment has already become suspicious of the employing class, be-

cause of past disputes between himself and his employer, and this attempt to prevent him doing business makes him more distrustful of the legitimate contractor.

The "carpet bagger" in many instances is admittedly dishonest and admittedly "red" in his belief. All three classes of "curbstone" contractors know only one sales argument—"Price," but they do know from heart breaking efforts to "beat the game," all of the possible ways of skinning a job to cut down the amount of material and labor necessary.

The "curbstone" contractors of the first two classes can be made of real value to the industry. The ambitious journeyman seeking to succeed in business for himself fills a definite place in the industry, but if he is to succeed he must be educated to proper business methods. The second class of "curbstone" contractor can for the most part be absorbed as a journeyman during the next year, but the "carpet bagger" is the man who in my opinion must be regulated because he does not care to be educated.

In the fall of last year the Electrical Service League of British Columbia faced the fact that "curbstone" competition in the industry was driving the legitimate contractor from the residence wiring field. An effort was made by the Vancouver Association of Electrical Contractors and Dealers to get the best of the smaller contractors to become members of the Association. Suspicion and uncertainty as to the motives of the Association, on the part of both the legitimate contractor and the "curbstone" contractor, made this effort fail and for a few months the field man of the League confined his efforts to the members of the Association.

An Attempt to Organize "Curbstoners"

The small group of Association contractors, however, could not stand against the larger "curbstone" group, so early in the year organization of the "curbstone" contractors, entirely independent of the National Association, was attempted by the Electrical Service League of British Columbia. The organization of the "curbstone" contractor is only a partial solution of the present cut price evil, because the education of the individual is useless—he cannot bring his competitor to realize the condition that he himself has been taught to understand. This organization must be independent of the legitimate contractor because, otherwise, the small man is so suspicious of his larger competitor that he will have nothing to do with the organization. The first effort of the organizer must be to sell his personality, his honesty of purpose and his ability to analyze conditions in the trade; to the "curbstone" contractor. Naturally suspicious of an employer or his representative, because of past experience as a union labor man, the "curbstoner" has become more so of any effort to organize or educate him, due to the past efforts to curtail his supply of material and so freeze him out. Six months ago the field man for the Service League in Vancouver succeeded in selling three "curbstone" contractors the idea of an independent

organization. With this small number as a nucleus meetings have been held fortnightly in the offices of the National Association.

Today the small residence wireman has an organization independent of the National Association, known as the Electrical Contractors Association of British Columbia. Attendance at the meetings varies from ten or twelve to forty, depending on the number of counter attractions and holidays, but the "curbstone" contractor of the first classification given earlier in this article always attends. He is anxious to learn, once sold on the honesty of purpose of the field man and of his ability to really teach him business methods.

Lectures on Estimating Are Given

At these meetings lectures are given by the field man on "The Cost of Doing Business, "Pricing a Job" and simple accounting methods and practice. Several National Association contractors have given lectures on estimating. Half a dozen of these small contractors have had the field man, for the Service League, install simple accounting sets for their businesses and more sets will be installed in the next few months. Many "curbstone" contractors of the second classification have declared to the field man, their willingness to give up contracting and work as journeymen. Business conditions have improved and it has been possible to place a number of these men back in the shops of the legitimate contractors. A year ago in the municipality of Vancouver there were one hundred "curbstoners" taking out permits for electrical installations, today this number has been reduced to sixty. The Electrical Service League cannot point out definitely, that this reduction in the number of "curbstone" contractors is directly due to any single effort of the League, but along with other conditions it has helped to bring about this decrease in number.

For one thing an increase in the business tax collected, has reduced the number. Other "curbstoners" have been absorbed in the industry as journeymen. At the same time the League has carried on a publicity campaign on the "Cost of the Lowest Bid" in electrical work, by direct mail advertising and through the columns of the local building papers.

This, however, does not touch the "carpet bagger" who is really a parasite on the whole industry. I believe, however, that even the "carpet bagger" can be controlled through the cooperation of the manufacturers and the jobbers. The jobber alone is helpless, but when the manufacturer realizes that the "pirate" jobber and his "carpet bag" wireman customer, are a direct menace to the industry, some effort will be made to regulate his activities. The "carpet bagger" is the pushcart peddler of other industries who is recognized by no legitimate manufacturer or wholesaler and who is in consequence, rapidly passing out of existence. The electrical industry must face the facts and as a unit undertake the education of the small residence wireman and the regulation of the "carpet bagger" in order that the industry may render to the public, that measure of service which entitles it to exist and prosper.

An Automobile Location System

By P. H. DUCKER
Superintendent of Transportation,
Southern California Edison Company

AS an answer to the problem of operating, maintaining and giving general supervision to the large number of motor vehicles used by the modern public utility corporation, the organization of a transportation department has been developed by the Southern California Edison Company. On this department rests the burden of supplying adequate and prompt transportation to all of the branches of the entire company. To be able to furnish the required motor vehicles at any time necessitated the



On this automobile location board, painted nails, which can be moved around and plugged in the board, indicate where the motor vehicles are located.

adoption of some method whereby a systematic check could be had on all of the motored equipment of the company.

To secure this check, the Southern California Edison Company has installed a blackboard which shows the headquarters of all of the vehicles under the supervision of the transportation department. On this board markers are used to indicate what cars are assigned to each garage.

The territory covered by this company makes it necessary to have garages located at points where cars may be gathered together and yet allow a rapid transfer of vehicles from one location to another, as the demands for transportation decrease and increase. Under the system used, certain automobiles and trucks are assigned to the garages and as they are given their home stations, the man in charge of the location board is notified of the assignment. He then places painted nails, which are marked with the car's serial numbers, in the squares set aside to designate the particular garages. These nail-markers are painted different colors to designate different classes of vehicles.

The location board is in the main office of the company. Reports as to the numbers of vehicles actually in use at various points are sent to the man in charge of the board and all requests for additional cars, also come direct to him. As he orders changes of location for the cars, he moves the markers to indicate what cars have been sent to new headquarters. Vehicles that are sent to the shop are also reported to him.

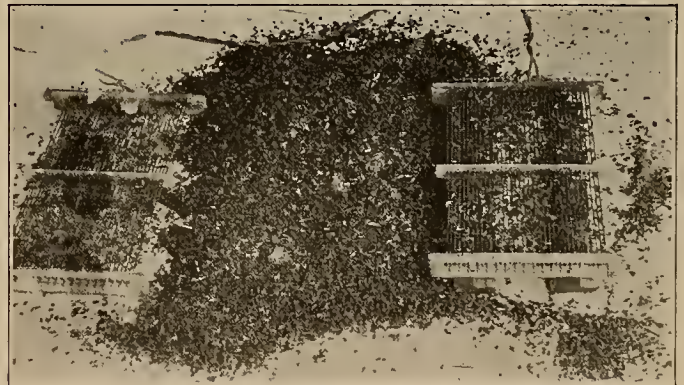
Electricity Used to Kill Flies

SUPPLEMENTING the already large number of uses for electricity in the field of sanitation is an electric fly killer, which has recently been put on the market. Devices for the sterilization, for the heating and cooling of food products and other articles, for the supplying of fresh, pure air, and numberless other sanitary aids have been made possible because of electricity—and now comes the electric fly and rodent destroyer.

Considerable inconvenience has always attached itself to the use of the old-fashioned trap commonly used in construction camps and by other establishments such as dairies, farms, hotels and the like. These baited traps were cumbersome and were often as obnoxious as the flies which they were supposed to eliminate. Even when the flies were entrapped within the cage, there remained the problem of disposal, or killing the flies by such methods as burning paper around the trap or immersing the bulky object in water. With the electric fly killer these objections are removed as the flies are killed by the electric current and drop to the ground where they remain and may be swept up and buried.

The device itself consists of a panel frame connected with a transformer which is attached to any lighting circuit. The frame is crossed by parallel rows of wire which carry a current of 500 volts. This frame is placed where the flies are known to congregate and as they are attracted to the parallel wires they are killed by the heavy voltage. Rats are killed in the same manner.

The current is on at all times, but according to the manufacturer, electricity is consumed only when a fly comes in actual contact with the wires, and then only a small amount of current is used. In his



Two of the panel frames of the electric fly killer.

words, "One fly will not move a meter." The fly killer is entirely automatic and requires no attention at all.

The same transformer and installation is used for killing rats, a change of frame and location being the only requirement. The cost is a little more, however, as the body of the rat is not consumed by the current and electricity is used until the body of the animal is removed from the frame. The electric killer has been tried and has been very successful in dairies, hotels and on farms.

Radio Telephone for Power Station Intercommunication

Wireless Provides Emergency Means of Connecting the Remotely Situated Power Stations and Construction Camps with the Operating Headquarters
When Pole Lines Have Been Destroyed by Elements

By R. C. DENNY
Operating Engineer,
San Joaquin Light & Power Corporation

OPERATING in seven of the Western States are some twenty large power companies whose long-distance transmission lines cross valley and desert, and top mountain ranges to render service to thronged cities, busy industrial centers, oil-fields, agricultural and mining communities of the West. The load dispatchers who are responsible for the proper operation of these systems base their calculations and plans largely on their faith in being able to communicate with the men in the various plants and substations about the system. Very often, though, the communication fails at just the crucial moment and as a consequence the service suffers, to say nothing of the criticism that often devolves on the operating department on such occasions. This frequently happens even on systems where several private telephone lines radiate from each office and thread out over the system.

These lines often serve several purposes, such as routine office work between districts, system dispatching and communication with construction

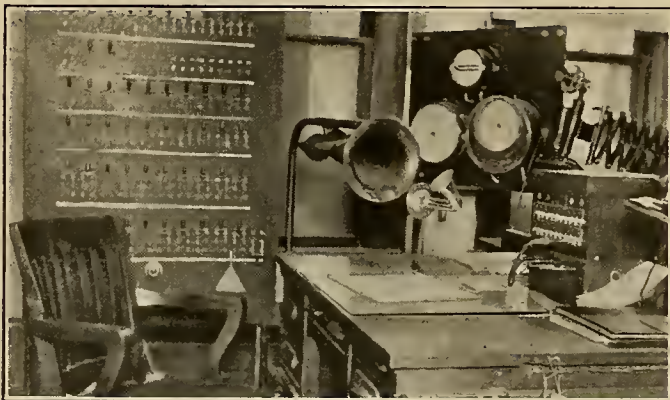
of no small importance, considering the necessity for the resumption of service over the power line as soon as repaired. Usually too, the poles, towers or whatever supports are used for the transmission lines are much more reliable as carriers of the telephone lines also, than separate pole lines used for the purpose. Thus it is, due to the close proximity, that the telephone lines usually become involved in transmission line failures and the communication crippled just when most needed. Even when carried on separate pole lines, many accidents may befall the telephone line.

Pole Line Subjected to Elements

Probably the greatest cause of telephone pole line and transmission line troubles are during severe wind and rain storms, when the wires are whipped together, poles washed out or loosened and blown down. In the mountains the snow and sleet load is responsible for many line breaks, while snow slides and falling trees also claim their share. During the summer months, forest fires and grass fires are the chief causes of line troubles while lightning strokes cause occasional damage. These are all causes that are quite beyond the control of the operators and occur regardless of the type of construction that might be used. In fact, no type of construction, however good, is ever entirely immune from the works of nature.

Having these interruptions in communication to contend with, the companies have had to make use of the best emergency means that are available and most applicable. The only method of communication without wires that has been developed to any degree of satisfaction, over great distance and natural barriers is radio. Radio need not be confined strictly to emergency situations in power company operations but can be used for routine work wherever justified, such as connection with construction projects remote from headquarters.

There are many such projects in the West where radio could be used to great advantage even before telephone lines could be built into the sites. Much time and money could thus be saved in avoiding the unnecessary rush usually incident to the construction of lines. Even though existing lines might be available, they are primarily there for the operating department and can seldom be given over to the construction department. The radio telegraph is generally most applicable to this class of work, as there is sufficient routine work to justify the services of commercial operators. Radio, for any of these classes of operation by the power companies, need not, nor seldom does, compete or conflict with the commercial telephone or telegraph companies.



A dispatcher's desk showing the telephone installation. Radio phone equipment could easily be connected in the same manner.

camp. Several of the companies make routine use of the ordinary Morse telegraph for dispatching, while others use it for working phantom on the telephone lines for routine business, in order that the lines themselves may be free the greater part of the time for operating purposes. With the great majority of the companies, however, we find the telephone used for dispatching, because of the great need for accuracy and speed.

In nearly all of these cases, the communication circuits are carried along under the transmission lines on the same poles or towers. The reasons for this are several; the more obvious being that it is more economical to use the same supports for both lines, and also that one right-of-way serves for both or several lines. It further follows that such practice greatly expedites line patrol which is a matter

Radio Telephone for Dispatchers

The form of radio most applicable to dispatching would be the radio telephone and on most systems would be required to work out over a 75 to 100-mile radius from the operating center of the system. The requirements on other systems are even greater, up to 300 miles generally for the reason that the operating headquarters are not centrally located but are rather at one end or the other of the systems. These systems have anywhere from a half dozen to thirty generating stations where the emergency use of radio might at times be advisable.

Each of the stations requires the services of three operators and a chief operator or station superintendent. Then in the dispatchers' offices there are from three to six men, so that the operating personnel would ordinarily represent a goodly number of men. These are men of mature years who by reason of their sense of responsibility and their experience are entrusted with the care and operation of expensive machinery. Such men, having a natural interest in all electrical subjects, would quite readily take to the idea of radio and quickly learn the use of the apparatus, but seldom would they become proficient in the code, which only comes with many months of conscientious practice, and then can sometimes only be mastered by younger men. For this reason, radio telegraphy though available for a good many years, has never been made use of to any extent for dispatching purposes. However, having the radiophone to turn to, in event of a telephone line failure, the dispatcher could without knowledge of a code, continue with his operating orders much as though nothing had happened.

Questionnaires sent out to some twenty of the western power companies have developed the interesting fact that all are alive to the possibilities of the radio telephone for emergency system dispatching; and show that when conditions are right and the way is clear, there will be considerable use made of this method of communication. Were it not for certain existing government radio regulations, the problems relating to radio telephone operators or operating personnel would be quite simple. While there is no particular difficulty attached to the procuring of station licenses or the allotment of wave lengths for this class of communication which comes under the limited commercial classification, the operator's requirements are somewhat stringent, being originally intended for operators of radio telegraph stations.

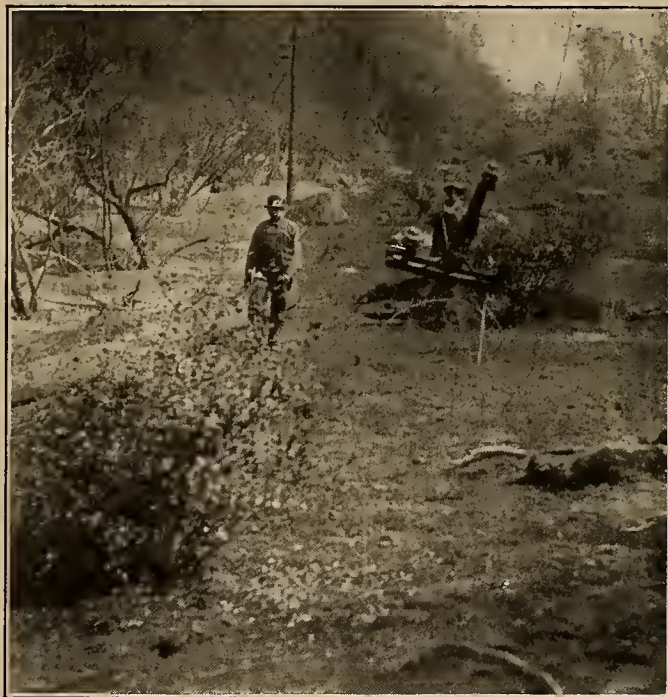
Requirements for Operator's License

In addition to a code test, the operator must pass a rather difficult examination on both the theory and operation of radio telegraph apparatus, particularly ship sets. The examination is practically the same for both first and second class commercial license, except that the code test for the first is practically twice the speed of that for the second class license. It is only the recipient of a first or second class commercial license who may operate a radio telephone installation. It hardly seems just

to impose the requirements of a telegraph operator upon a telephone operator and in this respect a revision of the present regulations would seem well advised.

Further, in regard to the regulations, there is a provision that obligates operators of limited commercial radio stations of the class known as coastal, to listen-in for distress signals for 2 min. out of every 15 min. that the station is in operation. It would seem that there are enough operators constantly on watch at sea to take care of that situation so much more effectively than private coastal stations as to entirely obviate such provision. This point is only brought up for the reason that a radio telephone station such as might be installed by any of the coast power companies would very likely be classed as a coastal station as its signals could possibly be heard at sea. The same provision holds for stations that might be heard on the Great Lakes.

The private use of the radio telephone for emergency dispatching on power systems could very well be handled by licensing one competent engineer to have complete supervision over the operation of the licensed stations of his particular system. Adequate



An example of a transmission line failure, due to a heavy wind storm. The telephone wires attached on the same poles were also broken by the fall.

control of the situation could be had in this manner at far less expense to the government than as now experienced. Since it is one of the intent resolutions of the Department of Commerce Committee at their recent conference "that radio communication is a public utility and as such should be regulated and controlled by the Federal Government in the public interest," it would be well to remember, that the power companies as public service utilities are operating in the interest of the public also, and that they should not be hampered in the application of an invention so useful in the improvement of their service to the public.

Modern Use of Exclusive Sales Agencies by Manufacturers

The Fifth of a Series of Articles Devoted to an Analysis of the Modern Tendencies in the Marketing of Products and the Advantages of Different Types of Distribution Methods as Applied to Various Classes of Goods

By E. A. KINCAID

THE much discussed quantity discount has found favor in the eyes of some manufacturers as the basis of sales which makes no discrimination between buyers with respect to function or traditional status. The only discrimination involved rests on the buying power of the buyers and this discrimination is quite in harmony with the economics of manufacturing. It is logical, for this reason, that manufacturers of staple lines should favor it. For such goods this method of selling is democratic, in that, any purchaser of a given quantity of goods receives the same discount as any other purchaser of the same product in like amount.

The discrimination as to buying power is justified because (a) most jobbers are manufacturers to a greater or less extent and thus are the competitors of those manufacturers whose goods they would distribute. (b) Moreover, there are too many retail stores and the quantity discount tends to encourage the survival of the most efficient, and that is just what should happen when the subject is considered from the point of view of the retail trade and from the social point of view.

The conditions affecting the distribution of specialties as contrasted with staples are somewhat different. With respect to these, different methods may be necessary to establish a market. To get results in terms of distribution some manufacturers have adopted a method of sale known as the exclusive agency. Much has been said for and against this fairly common method of selling, since it involves a selection of dealers within a given class and thus causes discrimination.

Discrimination for Sale of New Products

Discrimination between dealers of a given class has often been found the most effectual method of getting distribution for manufacturers of new products. The Certainteed Products Corporation began with a patented roofing material and gradually added to this a line of goods including paints, varnishes, liquid house stains and enamels. This corporation originally sold through exclusive agencies only, but after it once became powerful it broke away from the original sales policy.

The Beaver Company employed the exclusive agency as its sole means of distribution probably because of the fact that it had no competition, there being no other manufacturer of board of the same sort. When competition appeared the company found a different policy desirable.

For many years the Mallory Hat Company employed the exclusive agency for purposes of distribution in great centers of population, its sales in New York City being made through a single retail merchant. For small towns and cities the company

sold hats to all dealers who cared to handle its goods. This dual arrangement was more successful than its illogical character would imply.

So long as one store is in convenient reach of all the people of a city that one store may be sufficient as the manufacturer's approach to the market in that place. Thus it would seem that the exclusive agency has a better chance of success in small cities than in large ones.

An article may be sufficiently unique and distinct in character that a consumer will go to some trouble to obtain it. When a manufacturer produces patented articles such as the Certainteed Products Corporation and the Beaver Company, competition will be limited to possible substitutes until very similar articles are patented and placed on the market by competing companies. At such a time it may become necessary for an established industry to change its methods of distribution. Such was the experience of the Certainteed Products Corporation and the Beaver Company.

Competitive Conditions Cause Change

When the Mallory Hat Company began business in New York City about a century ago, that city and other centers of population were small when compared to their present size. At that time, one good store was sufficient, but there was a change in conditions even before the company changed its methods. Furthermore, the wholesale merchant who handled Mallory hats in New York City was tied up to one retail merchant who not only sold Mallory hats but any others that he saw fit. Thus the dealer had the prestige of the Mallory agency but he did not depend upon Mallory hats for his volume of business.

This arrangement was too one-sided to last and the Mallory Company now sells through jobbers to all dealers who will cooperate. Economic forces are slow and silent and their effectiveness is often overlooked, chiefly because the results of these forces can be seen only when viewed over a long period of time.

Recently a California organization, the Limon-eira Company, has had occasion to look into the merits of the exclusive agency method of selling as employed by it. This company is a large producer of lemons which have been sold exclusively through jobbers limited to definite territories. This arrangement was put into operation many years ago. With the passage of time the company has found itself with more fruit than the established line of jobbers could handle. Hence, there arose the question of abandoning the exclusive agency in favor of sales to all jobbers who could be induced to handle the company's product.

From the experience of these companies it may be seen that the use of the exclusive agency is fraught with problems which can best be grasped by a consideration of the advantages and disadvantages of this method of selling.

Advantages of the Exclusive Agency

Today many large manufacturers have found the exclusive agency a desirable means of distribution, (a) when the product is purchased by the ultimate consumer after a visit to several stores. Under such conditions the exclusive agency eliminates shopping and the competition of dealers to obtain the business. When but one dealer in a community handles a given product the exclusive character of the product is maintained. That such an impression should be made on the mind of the dealer and the consumer is quite in keeping with the character of a distinctive and unique article, which has no competition. The exclusive agency method of selling can be made profitable for both the manufacturer and the agency when a non-competitive product is in demand because of the support given by the advertising of either or both.

(b) Manufacturers have found that the exclusive agency functions well where a representative stock of goods necessitates a large investment on the part of the merchant. A representative stock is essential to the effective merchandising of a product whether the interests of the manufacturer or the dealer be considered. Without this full line of goods, certain products will be pushed while the sale of others will lag and such a result is obviously injurious to the interests of a manufacturer, who must find an adequate outlet for all products in his line. Not many merchants are strong enough to carry a full stock of specialties of the higher order. The demand may be very wide but not very concentrated in any one locality. Sales will be reduced if the dealer does not have a sufficient variety of all the products which the manufacturer advertises. To meet the requirements of such situations the merchant must invest a good deal of money in stock. It is essential for the manufacturer to select from among the dealers in a given place that one who is financially equipped to do justice to the product. One good merchant is more desirable as an outlet for a manufacturer than several weak ones and this one good merchant can be had if he is offered the exclusive agency of a product that enjoys a good deal of prestige born of quality and effective advertising.

These first two considerations probably lead Hart, Schaffner & Marx to adopt the exclusive agency. By this method sales are concentrated in that store which has the financial strength to carry a representative stock. Thus a thin demand is centered upon one retail establishment and the dealer is compensated for the heavy investment by the greater volume of sales which must result from the high standing of quality products with a national reputation. In one community there is just one place to go for the products of this company and at that place, the buyer may expect to find an ample and varied stock from which to make his selections.

(c) Oftentimes the product which the manufacturer seeks to market is of such a character that it requires explanation of certain technical characteristics in order to accomplish its sale. The manufacturer is best equipped to inform the dealer and his salesmen about the selling points of such a product. His familiarity with the manufacturing processes of his own product and its merits, as compared to the products of competitive concerns, makes it possible for him to educate the dealer. When the exclusive agency is employed it is not necessary for the manufacturer to do a great amount of this educational work and it is worth while for the dealer to become expert in the sale of the product. Illustrative of goods of this character is the Groundgripper shoe. It is a distinctive product with unique features, some of which are covered by patents. The agencies of the company represent themselves as foot specialists, with a shoe that will solve foot troubles of the most complicated character.

(d) Many products are of such a character that personal service is required to install them and put them into operation. This is true of the products of the International Harvester Company. Its binders and harvesters must be set up and put into operation by a technician who is prepared to instruct even the most stupid operator. What applies to harvesters holds for tractors, automobiles, pianos, heating and plumbing fixtures, expensive articles of dress and adornment and numerous other articles.

When Best to Distribute By All Dealers

On the other hand, distribution through all dealers who will cooperate with the manufacturer has been favored by those manufacturers who (a) sell merchandise that is purchased without much deliberation on the part of the consumer. Merchandise of popular appeal and frequent sale will have its demand stimulated best when competitive channels of distribution are employed. Goods bought on the impulse of the moment fall in this class. Lemons are distinctly of this character and it is for that reason that the Limoneira Company may find the use of exclusive jobbers undesirable.

Staples in general will get to market in the greatest volume when handled by competitive distributors, as buyers of staples will not go out of their way to obtain them. No unusual expenditure is involved in the purchase of such goods and the buyer will not spend a great deal of time in considering the best way to expend the amount required.

On the other hand, fine gowns which sell at fancy prices, automobiles and pianos, will involve a considerable expenditure at one time and for this reason the buyer will usually want to shop enough to make a comparison of values. Here the exclusive agency with a knowledge of the technical aspects of the product will get the best results. In determining upon the method of sale it is therefore important that the character of the product be taken into account.

(b) Products of relatively small investment requirement, with respect to the amount of stock that must be carried, can best be distributed in the free-

for-all method which makes use of all dealers who can be interested in the goods. No particular financial strength is required in order to have an adequate and representative stock. The turnover of such goods should be high and a little capital will afford the basis for a considerable volume of business.

(c) Articles of popular and general appeal such as tobacco, cigarettes and chewing gum, groceries, food stuffs, collars, socks, shirts, soaps, talcum powders, toilet articles, toys and utensils of many sorts will be found in this class. The more dealers that can be induced to handle such goods the better from the point of view of the manufacturer. The use of the exclusive agency for such goods would result in hedging the goods about with restraints which would be too great to be overcome.

Size of Territory for Exclusive Agent

The use of the exclusive agency involves the consideration of a third group of problems. The extent of the territory allotted to an exclusive agency must be worked out. The dealer usually wants a big territory, but just what size it should be must be determined by the manufacturer after consideration of the capacities of the dealer.

In the next place, the bestowal of an exclusive agency by a manufacturer often carries with it the tacit understanding that the agency will concentrate its selling effort behind the one line. In actual experience the dealer has often shown a tendency to corral the agencies of competing products in order to cut off competition in his territory. This results in anything but concentrated selling effort behind one line. Furthermore, the exclusive agency fails of its purpose in some cases because the dealer does not make known, to the consumers of his community, the fact that he has the exclusive agency of a product. This may be the case despite the fact that the manufacturer has purchased his advertising through the local dealer. Often it is possible for the manufacturer to get better results without resorting to exclusive agencies and this will be the case where he is strong enough to distribute from his own branch houses.

Legal Aspects of the Sole Agency

Finally, the manufacturer who makes use of the exclusive agency must take precautions that he is not entering into an arrangement that involves a violation of the laws intended to foster competition. An exclusive agency arrangement may be in restraint of trade. Section Three of the Clayton Act provided that "it shall be unlawful for any person . . . to . . . make a sale or contract for sale, of goods, wares, merchandise, machinery, or other commodities . . . on the condition, agreement or understanding that the purchaser thereof shall not use or deal in the goods . . . of a competitor . . . where the effect of such . . . sale . . . may be to substantially lessen competition or tend to create a monopoly." This section was inserted in the Clayton Act because of some confusion as to the exact meaning of the Sherman Act. Pending the construction of the

terms of this section by the courts the Federal Trade Commission has construed it according to its own notion of the intentions of Congress.

Thus the Standard Oil Company and several other oil companies were ordered by the commission to cease and desist from leasing gasoline pumps and tanks to dealers upon the condition that only the oil of the company making the lease should be stored in the tanks. The Fruit Growers' Express Company was ordered to cease and desist the leasing of refrigerator cars to railroads under a contract calling for the exclusive use of its equipment.

The case of the Standard Fashion Company vs. Magrane Houston Company involved the form of contract which has been under consideration in this paper, to wit, the contract whereby the dealer agrees not to sell the goods of a competitor during life of the contract. Without entering into a discussion of the technical aspects of these cases, it is sufficient to call attention to the fact that there are possible legal complications because of its use.

In conclusion, it may be said that the exclusive agency functions best when the manufacturer places his product or line with some enterprising merchant who feels that the assurance which the restrictions that the agency involves will warrant him in giving the manufacturer liberal cooperation in the way of an ample and varied stock, technical explanation and demonstration of the product and genuine selling effort concentrated on the product. If there is also an intimate connection between the dealer's advertising and the national campaigns of the manufacturer the chances of successful distribution by this method are even greater.

Electrical Kitchen Is Household Dream

When dreams come true every woman will have:

A kitchen that is cool though the day is warm.

A kitchen free from soot, smoke, fumes, flames, coal, ashes, or greasy film.

A kitchen where there is no danger from explosion or asphyxiation.

A kitchen where food is cooked with maximum deliciousness and minimum shrinkage.

A kitchen where food may be cooked without watching.

A kitchen where cooking heat may be regulated to an absolute degree of temperature.

A kitchen where dishwashing is not slavery.

A kitchen where hands need not be reddened or marred by soaking in soapsuds, by continuous beating or chopping, by scrubbing and scouring.

A kitchen where no ice pan runs over and no ice man leaves muddy footprints on the floor.

A kitchen where cooking odors are skilfully shown the shortest way out.

A kitchen where kitchen charms still live but kitchen horrors have been electrocuted.

An Electrical kitchen!

Eliminating the Waste in Industry

Shortcuts in Management and New Power Applications Which Have Been Adopted in Western Industrial Plants for Eliminating Waste, Increasing Production and Cutting the Cost of Manufacturing Processes

By LOUIS F. LEUREY
Industrial Electrical Engineer

Eye Strain Eliminated by Good Illumination in Plants

It is seldom realized by the industrial world what an important part good illumination, during day time and night time, plays in the conservation of eyesight with its resulting increased output from the industrial operator as well as the prolongation of his period of usefulness in the field of production. The human eye reacts to changes in lighting conditions very much as would a most sensitive lens and nothing is more wearing and consequently more destructive on the optical nerve than the continual switching from a brightly lighted spot to a field of comparative obscurity.

A great many mistakes have been made in the past and altogether too many are being made at present in the illumination of industrial establishments by setting up local fields of high intensity illumination and leaving the surrounding areas in comparative darkness.

It is, of course, good practice and absolutely essential to have in many classes of operation, good intensive local illumination on work which requires fineness of detail and on work which has a large light absorbing capacity, but it should always be borne in

THIS DEPARTMENT

will be devoted to a discussion of the various problems of waste in industry as they affect western industrial plants. Readers are asked to aid in the solution of the most vital problems facing industry by sending in accounts and pictures of the various practices for combating waste, which have been adopted in plants with which they are familiar. It is only by thus co-operating with Mr. Leurey that the fullest service can be rendered. Space rates will be paid for all material which is published.

mind in laying out such installations that a sufficient intensity of general illumination should also be maintained in order not to have those rapid and destructive alternations from an extremely bright to a relatively dark field of illumination.

In many types of plants where there are large quantities of shafting, spouting and other obstacles to general illumination, it was thought that this could not be secured, but the photograph accompanying this article shows that, where a judicious choice is made of an illuminating unit, very successful results can be achieved even under these

conditions. To secure good general illumination under these conditions as shown in this photograph, one excellent method is to use a unit with high inherent diffusion and to supplement this diffusion by a properly tinted ceiling, where this is possible, so that a secondary and still further diffusion is thus secured and practically all shadows are eliminated.

A very important and necessary conservation of eyesight is not the only advantage of high class illumination, for in addition to the increase in output which must necessarily follow there is the secondary advantage in improving the quality of production. A well-lighted factory is almost invariably a clean factory, with the resulting cleanliness of product, conservation of materials and a general improvement of operating morale based on the comfort and mental alertness of the workers.

Consulting Engineers Prevent Construction Waste

There is no greater source of waste prevalent today in our general industrial establishment, and no condition more capable of correction, than the many attempts to do without engineering service in the planning and installation of works of sufficient magnitude. The managements of a great many industrial enterprises have adopted the attitude that as they know more about their own business than any one else, it is therefore unnecessary to secure engineering advice in the planning of any of their manufacturing programs.

Anyone who has had even a glimpse of the working out of many of these industrial programs can very readily see where a small investment in carefully prepared plans and estimates would have saved many times that investment in the actual carrying out of the project.

The active manager and staff of an industrial company are naturally all very busy men and their energies and time are very fully occupied with the routine processes of production, warehousing and shipment, and when anything in the nature of a construction program or an expansion of the plant takes place, it imposes an additional and very heavy burden upon an already actively employed set of men. The result of such a program is to produce a plan of operation based too often upon hasty decisions borne of the intensity of effort required. These hastily completed plans very frequently bring about a lack of coordination in the progressive stages of the work and a correspondingly high cost.



Night view of the grinding floor of the Sperry Flour Mills, Ogden, Utah, showing the effective illumination secured by the use of overhead lights fitted with diffusing reflectors.



Piles of scrap iron and steel ready to be remelted in the furnaces of the Pacific Coast Steel Co.'s plant in San Francisco. This company consumed over \$5,000,000 worth of scrap material during 1920.

Use of Scrap Iron and Steel by Western Industry

Industrial Development of Pacific States is Furthered by Use of Scrap Material by Rolling Mills

In the interest of Pacific Coast development, it is probably little realized by the manufacturing companies and the public generally what a very important part is played by discarded pieces of iron and steel which have served their original purpose in some form of machinery or manufacture.

This discarded scrap iron and scrap steel is nearly a fundamental necessity in the operation of the six large rolling mills, and probably one hundred foundries up and down the Pacific Coast which depend largely upon the remelting of the material, for the manufacture of many new products used in buildings, boats, highways, structures

of every description as well as machinery. The prime reason why this scrap is such a necessity is that there are no blast furnaces on the Pacific Coast conveniently located to supply the requirement of these rolling mills and foundries with iron in its original state, or what is known as pig iron.

If all of the iron and steel scrap that is accumulated on the Pacific Coast is carefully collected so that it may reach these rolling mills and foundries through the already established channels of collection, it is probable that there is a sufficient quantity to keep them supplied. For individual manufacturing plants or persons to discard

this scrap where it is unsuitable for reclamation is as serious a loss to our local industrial development as the destruction of food products would be to the general public. In fact, manufacturing companies and individuals will be rendering a distinct public service when they collect this scrap and turn it into the established channels of distribution even though their margin of profit over the actual cost be ever so slight.

This feature is more far-reaching than it appears on the surface. For instance, the rolling mills and foundries of the Pacific Coast employ not only a large force of labor, but are large users of electrical energy, oil, brick, lime, dolomite, and other materials all of which are produced on the Pacific Coast, and thus foster in a compound ratio the stimulation of general industry. All large users of steel and iron products have recognized the importance of marketing this scrap product and have organized a regular force to care for it. Were it not for these steel industries on the coast, especially the rolling mills, this product would be practically valueless in that transportation to the East would prohibit scrap competing with pig iron that is mined and prepared in the eastern market.

About ten years ago the production of steel in open hearth furnaces was commenced commercially on the Pacific Coast, and a large variety of scrap materials formerly of no value, at once became marketable so that today there is use for practically every description of scrap.

It may be stated that for every ton of scrap consumed by the steel mills, the railroads secure about \$7 per ton freight upon shipments into and out of the mills and the mills expend in labor alone more than \$20 for every ton melted.

Only very recently the Metal and Thermit Corporation installed a large plant at South San Francisco wholly for the purpose of removing tin from scrap, thus not only recovering the tin but producing scrap suitable for melting in open hearth furnaces.



An idea of the nature of the material that finds its way to the open hearth furnaces that are used to remelt the scrap on the Pacific Coast, may be obtained from this picture.

Western Dealer, Jobber and Agent

Business building suggestions for the store—Distribution and warehousing methods—Advertising and sales promotion ideas

After the Trade Show Have a Show of Your Own

At the fair, the food show, or the trade exposition, you arouse a lot of interest with an attractive electric appliance booth; you talk electric cleaners to a good many folk who ought to be first class prospects; you work up quite a glow of enthusiasm, all in all. But how to get the interested folk, the possible prospects, and the enthusiasm to your store? How can you connect up the fair and the cash register without the extra expense of house-to-house calls on prospects?

The Burton Electric Company, of San Diego, Calif., succeeded after devoting considerable thought to the matter. In a recent number of "Royal Breezes," house organ of the P. A. Geier Company, the story is told of how they did it when the San Diego Business Men's Fair came off recently.

Not only did they work out a new formula for demonstrating the booth, but they announced a prize contest in which a cleaner was to be awarded the lucky winner. Coupons for the contest were given out at the fair, and everyone was told to come to the store on Saturday evening, when the award would be made. Needless to say, the shop was crowded at the appointed time, with an overflow on the sidewalk in front. The Burton Electric Company had a whole fair for themselves, and they used it to good advantage. Innumerable prospects were secured, for names and addresses were signed to all of the tickets in the contest.

"A tremendous success," said Mr. Burton. And it must be admitted that it was a clever tie-in for his store.

Putting "Good Enoughs" in the Grease

By JOE OSIER

Before dedicating a few lines to the "Good Enough Boys"—

Meaning the Men of the Trade who are of the opinion that—

"Get-by" will eventually reach the pinnacle of success—allow me to state, in a few fearless words that—

By no manner or means am I aiming my "slings and arrows" at the men of the electrical industry generally. "How-ever"—

As the friends of the pee-pul remark prior to the battle of the ballots—

There are many "Good Enough Boys" in the business today who are making it "tuff" for the real Contractor-Dealer and to these—

Witless ones—

I tenderly proffer this blast.

The "Get By-ers" can easily be recognized because the marks of unreliability and inefficiency are indelibly stamped on them—and, besides,

They leave a trail a mile wide and this trail always leads to the bankruptcy court and—

Every time I hear of a "Get By" shop going under I remember that celebrated

line in the ol' copy book which stated that—

"Cheating never thrives."

In case I am shooting high for the legitimate men of the industry, let me explain that—

"The Good Enough" is the Bird who slaps fixtures in the "Fool the Bride" bungalows, who—

Skins jobs on every occasion—who

Installs faulty materials in a haphazard way and forgets the job as soon as the kale therefrom is—

Nestling in his poke.

Every bond man in town knows him and steers clear of him; the supply houses refuse to "use" with him unless he has the—

"Jack" in his jeans and—

He is as welcome at a bank as—

A full fledged run—for instance.

And, there is a reason for all of this, because—

The "Get By-er," usually, is a menace; he is bad business for good business men and—

The sooner good business men realize this truth, the better off they will be.

The electrical industry, whether the men engaged in it are manufacturing, selling or installing—

Is one of the greatest factors in the progress of this civilization—

(Cheers.)

And the Knights who are carrying the banners in the forefront should—

By all means, keep the escutcheon blotless.

Now—I believe, in spite of the fact that I have never taken a cash discount for a bill of electrical fixtures nor—

Installed even as much as one drop in a cubby hole, that—

If reputable men of the trade—members of associations—would get their heads together and—

Confab on the question of this "fly in the ointment"—who continually makes hard sledding for—

The regulars in the game—

They could make him hard to catch.

This latter could be done, I think—

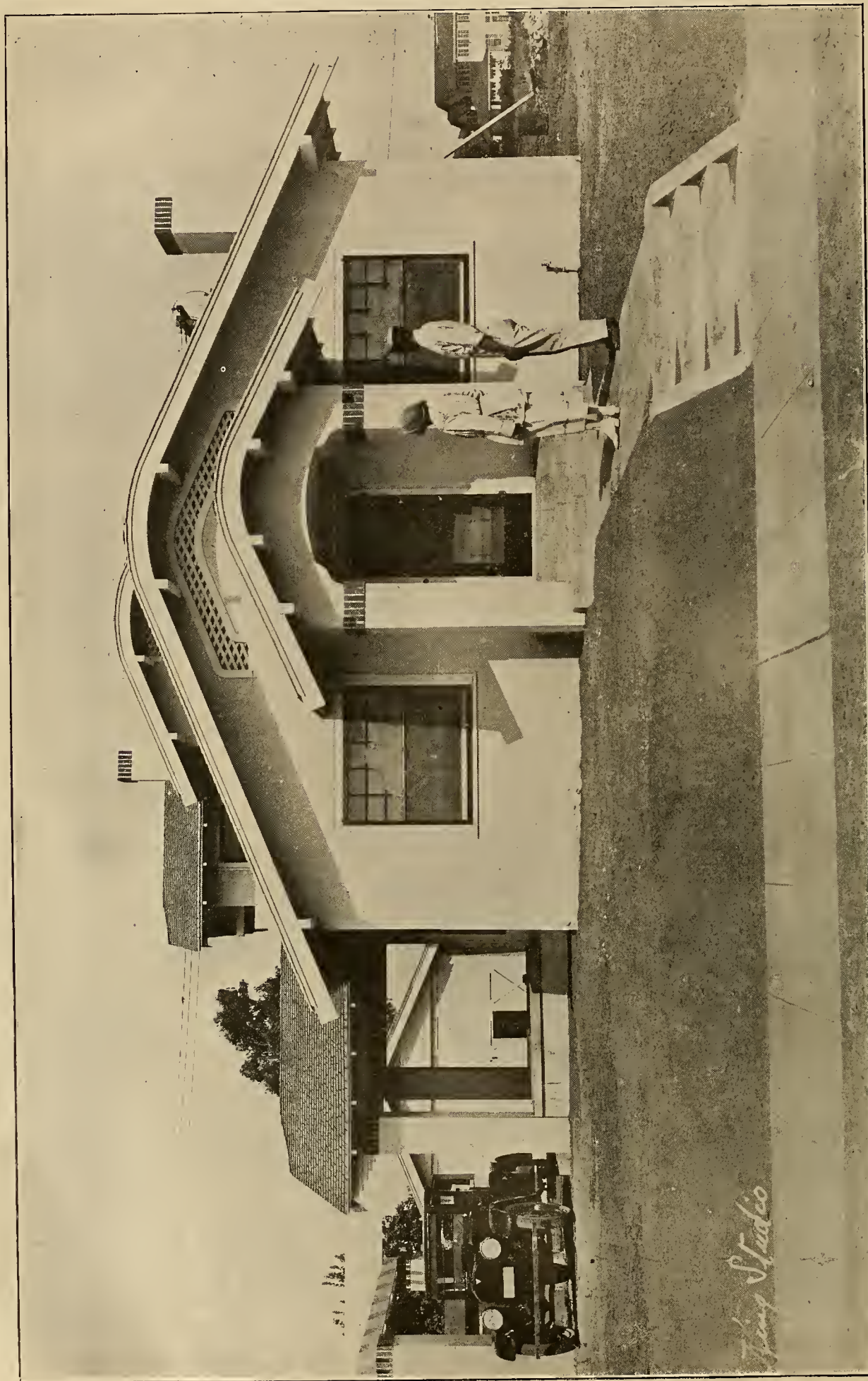
By advertising, by missionary work among the architects, builders and bankers; by—

Turning the white light of publicity in the general direction of every man in the game who insists that "Good Enough" is—

"Good Enough."



This is part of the crowd that overflowed the store of the Burton Electric Company, San Diego, Calif., on the night that a drawing was held for a vacuum cleaner, tickets for which were given out during a trade exposition and fair the week before.



The electrical home pioneering work in California is beginning to bear fruit. Nels H. Nelson, general contractor in Fresno, builds nothing but electrical homes. He advertises that fact on his construction jobs, sheds, and street

signs. He has just completed two electrical apartment houses and has eight homes under construction. This is the most recent home to be completed in a rapidly growing residence district.

The Central Station, the Dealer and Cooperation

Why the Dealer in Sections Where the Central Station Sells Appliances Need Not Fear Competition

By J. E. BULLARD

There was a time before the war when there appeared to be serious danger that there would be unfair competition between the central stations and the dealers, that the central stations would sell utensils and appliances at prices considerably below the actual cost of doing so. The war and war conditions which have placed very heavy burdens upon all central stations has done a great deal to overcome any tendency along this line. Today, if there is any unfair competition it is more likely to be due to the lack of exact knowledge of the actual cost of handling appliances than it is to any intent on the part of central stations.

In the good old days a central station could easily make up the loss due to the sale of appliances out of the revenue received from current. In the present and in the coming days such a course does not appear to be so easy. In a great many cases the margin of profit on the current sold has been shaved down to an even dangerous point. It will not do to take any chances on losing in any department. Each department will have to pay its own way.

Price cutting methods are being discontinued and looked upon askance more and more. It has been discovered that in the long run they do not pay. For a little time the results may be good but in the end they are more than likely to be bad. This has led to a greater and greater discontinuance of price cutting on the part of central stations and it can be expected that it will have a still greater effect in the future.

The central station, the manufacturer and the public all need the dealer. Without the dealer it will not be possible to sell as many appliances. Without the dealer, the manufacturer will not be able to secure the distribution that is necessary to make national advertising profitable. Without the dealer,

the public will not be able to secure with as little trouble as is the case at present, any make and any kind of appliance on the market. No one concern, be it the central station or a dealer, can afford to carry in stock all makes and all kinds of electrical supplies, devices, utensils and appliances now on the market. Should unfair competition on the part of the central station drive all the dealers out of business it would be a disaster for all concerned.

Many a central station conducts its sales end in such a manner that it is rather difficult, in some cases it may be impossible, to ascertain with perfect accuracy, the cost of selling appliances. In such cases it is possible that prices which are too low may be set upon certain articles or services. Since such unfair competition is due to lack of accurate information rather than to intent, it will pay the dealer to classify his costs in such a manner that he can show the central stations by means of his own books that they are losing money on these appliances. Unless he does so they are rather likely to believe that they are doing business more efficiently than he is doing it.

There is probably no other line of business where it is so important that accurate cost accounts be kept as in that of selling electrical appliances. Careful, accurate bookkeeping always results in increasing the profits and for this reason alone all records which tend to increase profits should be kept. In this case, however, there is an added reason. Reliable records of the cost of doing business may result in preventing competition which otherwise would drive many a dealer out of business.

It has been pretty well demonstrated in many fields of merchandising that it is not the initial cost of buying anything to be used in the home that counts as much as it is the cost of operating it after it is purchased. The

lower the rate can be made for electric current the greater the demand will be for appliances. This means that rather than use up capital and revenue in selling appliances it will be better for the central station to spend its money in teaching the public how cheaply these appliances can be operated, and in working out economies that will make lower rates possible.

It is never the cost of any article that determines whether or not it will enjoy a wide sale.

What does count is the creating of a real desire to use these appliances. A great deal is being done along this line now. More will be done in the future. This is the logical field in which the central station can spend its money. This is the field in which it is already spending goodly sums and in which it will spend more as time goes by.

A manufacturer might ship a number of automobiles to some barbarian island where the natives had never heard of automobiles and they would not become nearly as enthusiastic about them as they would have become if, for several years before, this manufacturer had thoroughly educated the natives in regard to what an automobile will do and its many advantages. Less than two score years ago the public knew less about electrical appliances than any barbarians of today know about automobiles. It is evident, therefore, that in the face of the wonderful advances that have been made even during the past ten years, the public has not been able to keep pace with all the advantages of electricity.

Under these conditions anyone can see that what is needed is not an attempt on the part of anyone to sell appliances by cutting prices and driving competitors out of business, but co-operative education of the public. It is this that is now going on all over the country. It is this that will go on still more in the future. Under these conditions dealers, as long as they do business on a sound business basis and keep sufficient records to show that they are doing business on a sound basis, need never fear that they will have to meet unfair central station competition.



USING CONTRAST TO ADVANTAGE IN WINDOW DISPLAYS

The Western Colorado Power Company, Durango, Colo., drew attention to the varied use of electric appliances in the home with two contrasting window displays recently. The two illustrations show two types of

kitchens, one in which electricity has no part and the other completely electrified. Large crowds were always in front of the windows, which faced on one of the main streets of the city.

Activities of the West

A Business Man's Department Devoted to Events and Developments in Western Industrial Centers—Including News of Interest to Readers in Public Utility, Industrial and Trade Fields

Reductions Save Californians Twenty Million a Year

Rate reductions during the last year in California will save the people of the state \$20,350,000 annually, according to a report of the California State Railroad Commission. This saving will, on an annual basis, save every person in the state \$6.

The reductions are divided among the public utilities and will give to the people the following savings, computed upon a yearly basis: electric rates, \$6,000,000; gas rates, \$2,900,000; railroad rates, \$10,450,000; and express rates, \$1,000,000.

The commission also stated that electric rates in California are now only 16 to 20 per cent over pre-war levels while living costs are still 66 2/3 per cent above 1913 costs.

In commenting on the reductions, Harley W. Brundige, president of the commission, said: "To me, this showing is very significant as completely justifying regulation. The figures show that during the peak of prices the utilities were not permitted to profiteer and at the same time they were given reasonable increases so that they could function properly. As was said at the public utilities section of the recent meeting of the American Bar Association, 'A starved horse cannot pull a full load.' The utilities were enabled to pull a full load. It was recognized that a period of advancing prices put a severe strain upon regulation, but it met the test. It is equally obvious that regulation would fail if it was not vigilant to take advantage, promptly and boldly, of every opportunity to keep utility prices in line, even a little ahead, of a declining commodity market."

The reduction in electric rates from peak prices, as allocated to the principal companies, indicates the sectional distribution, as follows: Pacific Gas & Electric Company, \$2,000,000; Great Western Power Company, \$500,000; Southern California Edison Company, \$3,000,000; and San Joaquin Light & Power Corporation, \$500,000.

San Geronio Company to Install Two Hydroelectric Plants

Two hydroelectric power plants are being installed by the San Geronio Company at a point about 5 mi. north of Banning, Calif. The combined capacity of the two plants is to be about 2,200 kw. with an annual output of approximately 12,000,000 kw-hr.

The water for the plants is secured from the Whitewater River and is carried several miles in a flume from which it is dropped to the plants by means of pressure pipes. The installation of the plants is a comparatively simple affair as the water development

1923 Convention of N.E.L.A. to Be Held in New York

At a meeting of the executive committee of the National Electric Light Association at New York, President Frank W. Smith announced that the tentative date selected for the 1923 convention of that organization is June 4-8. The convention will be held at the Commodore Hotel in New York.

The executive committee passed upon all budgets for division headquarters and committees, many being reduced materially. The Pacific Coast Geographic Division was allowed \$17,000 which is but a reduction of approximately \$500 from the budget of 1922.

is an old one, having been used for several years for irrigation purposes. It will only be necessary to fill in the gaps in the line and use the fall already developed.

Contract For Tunnel to Utah Coal Deposits Let

The second of the contracts for preliminary work of the Columbia Steel Corporation's operations in Utah has been let, and provides for the driving of a tunnel and opening up the company's coal deposits in Carbon county. The contract was awarded to the firm of Gibbons & Reid of Salt Lake City.

Estimates are now being prepared for bids on the contract for the erection of necessary buildings in connection with the coal mining operations and for the installation of a water system to serve the camp.

Contract for the grading of the Carbon County railroad, which is to connect the coal property with the Sunnyside branch of the Denver & Rio Grande, was let some time ago.

The work contemplated and under way in opening up the coal property, including the installation of the water system and the erection of the buildings, will call for expenditures aggregating about \$750,000. It is the purpose of the company to push the work as rapidly as possible and have the property in operation this winter.

Articles of incorporation were filed with the corporation commissioner recently by the Evening Star Mines Co., of Eugene, Ore. This firm will carry on mining, quartz mill and stamp mill operations with a capital of \$100,000. F. J. Bartels, J. H. Bartels and G. E. Goodspeed, Jr., of Cottage Grove, Ore., are the incorporators.

Third Unit Will Be Added to Salem, Ore., Paper Mill

A \$300,000 contract has been let to C. Van Patton & Son for the construction of an addition to the plant of the Oregon Pulp and Paper Company of Salem, Ore. The addition will form the third unit of a rapidly growing concern and will bring the amount invested up to \$2,000,000. The new building is to be a four-story steel, reinforced concrete structure adjoining the present building. Construction work has begun. This mill will give Salem the only bond paper mill on the Pacific Coast.

The new 116-ft. Bagley & Sewall Fourdrinier paper machine to be installed is a decided improvement over either of the two machines now installed, one of the principal differences being that the new machine will have the individual motor drive of the General Electric Company. Direct current motors will be connected to the individual parts of the big paper machine through silent chains—a new departure in paper machine drive which is expected to make a saving in the cost of operation.

The addition of the third machine will bring up the total connected load to 3,600 hp. The company is now purchasing its energy from the Portland Railway Light and Power Company but is planning a low head hydroelectric plant, using water from the North Mill Creek to develop about 800 hp., at a point 3/4 mi. from the paper mill. The generating plant is expected to be in operation during the coming winter.

Seattle Lumber Mill Is to Be Completely Electrified

The complete electrification of the Seattle Cedar Lumber Company is now assured. Recently a large contract was signed with the General Electric Company for the entire equipment. This included two turbo-alternators of 1,500 and 300-kw. sizes, respectively, a 35-kw. Curtis turbo-exciter, a 50-kw. motor-generator exciter, a 100-kw. motor-generator battery charging set, switchboard and a long list of motors totaling between 2,500 and 3,000 hp. The generators and motors are all wound for 440-volt, 3-phase, 60-cycle current.

In planning this electrification, which includes all drives from the head saw down, the owners have recognized the value of safety features. All motors are to be equipped with full automatic starters with push button control. Ross lumber carriers will be used for handling the lumber. The mill is now steam driven.



Interior of radio station in the Sierra Nevada Mountains of Fresno county, Calif., where orders will be received directing the work of the 500 men working on the Florence Lake tunnel.

Winter Crews are to Receive Orders by Wireless

Radio Will Permit Engineers to Communicate with Construction Camps in Spite of the Heavy Snowfall

In the high Sierra Nevada Mountains of Fresno county, Calif., radio will be used this winter to direct the activities of 500 men who will go into camp behind 30 mi. of impassable snowdrifts to push forward during the winter the Florence Lake tunnel, which is a part of the gigantic hydroelectric development project of the Southern California Edison Company.

The success of radio was so thoroughly demonstrated during last winter, not only in directing the work of the men who were beyond wire communication, but in picking up and carrying on communication with the general offices of the Southern California Edison Company in Los Angeles, a distance of 270 mi. from the outposts of operation, that facilities have been greatly improved in preparation for this winter's work and new and expensive apparatus put into service.

Due to conditions during the winter when snow and sleet storms are prevalent, it was found the telephone lines did not give reliable service. Therefore, the radio communication was decided upon and has proven satisfactory. There are now three combined radio, telegraph and telephone stations in operation and one more radio telegraph is being installed. The headquarters station at Cascada, from which all orders will be sent, is at an elevation of 5,000 ft., in a canyon approximately 2,000 ft. deep, with abrupt walls on three sides. The second station is located at a construction camp on the shore of Florence Lake, which is the south portal of the Florence Lake tunnel, at an elevation of 7,000 ft., and about seven and one-half miles in an air line northeast of Cascada. The third is located at a construction entrance camp, over the Kaiser Range, which is about eight miles in an air line north of the south portal on Huntington Lake.

This station is only about 300 ft. higher than the portal station, but there is a mountain pass about 2,000 ft. high between them.

The construction entrance camp is at an altitude of over 9,000 ft. Due to the location of the stations and the topography of the country and the fact that little was known regarding radio communication in a mountainous territory, it was necessary to do considerable experimenting before satisfactory results were obtained. Tests showed that to communicate a certain distance it was necessary to use about twenty-five times more power than was needed near Los Angeles.

The three transmitters rated at $\frac{1}{2}$ kw. were built on special order. One oscillation tube is used in each set. They were designed originally for continuous wave telegraph, but have been equipped for telephone or buzzer modulated telegraph. All three methods of communication work well.

To furnish power for the boring of tunnels for the hydraulic development a 30-kv. transmission line has been built between Cascada and the two outpost mountain camps. The radio sets give a rapid and reliable means of communication during transmission line trouble and handle switching and operating line orders. The transmitter at Cascada obtains its filament current from the 110-volt supply and plate current from a 1,500-volt generator, belt driven by a 2-hp. induction motor. The radio power plant at Huntington Lake portal camp and the construction entrance camp consist of a 220-volt, three phase motor, coupled to a 32-volt d.c. generator and belted to a 1,500-volt d.c. generator from the coupling. Under normal operation the 32-volt d.c. generator furnishes power for the filament and the 1,500-volt d.c. generator supplies the plate. During a failure of the

30-volt transmission line, the 32-volt d.c. generator operates as a motor from the storage batteries of the mine locomotives used in the tunnel work.

The antenna at Cascada is of the inverted L type, 140 ft. high at the free end, 90 ft. at the station end, and 120 ft. between spreaders. Five No. 8 copper wires spaced 4 ft. apart are used. At Florence Lake portal camp a T aerial is installed, being 140 ft. high and 175 ft. between spreaders. The same wire and dimensions are used. At the construction entrance camp a T



The log cabin used as a radio receiving station by the Southern California Edison Company, while driving the water tunnels.

aerial 90 ft. high and 150 ft. between spreaders is placed. The radiation from each of these antennas is about 2.4 amperes at 540 m., which is the normal operating wave length.

New Heat Power Laboratory For University of California

Clearing of the site for the first unit of a group of buildings for the College of Mechanics at the University of California, has been started and construction will follow immediately. This building will house the heat power laboratory and will be a one-story reinforced concrete structure 40 x 100 ft.

A pipe tunnel approximately 6 ft. 4 in. x 8 ft. 8 in. will run along the long end of the building and from this main tunnel several small trenches will lead off. A pump pit will be in the middle of the building, with a pump sump below. A fan room will be in the end of the building below the floor level. About 40 per cent of the roof area will be given over to a spray nozzle for cooling water.

The equipment of the building will consist of one 150-hp., 350-lb. steam pressure experimental boiler, set to fire oil or powdered coal, and is to be equipped with complete control apparatus and the usual boiler auxiliaries arranged for experimental work; a 15-hp. gas fired boiler and engine; a 50-hp. marine compound engine with integral condenser; a 25-kw. turbo-generator with condenser; a 75-hp. uniflow steam engine and condenser, semi diesel engine, variable compression engine; a Westinghouse gas engine; a Frick Corliss engine; a refrigeration plant; an air compressor plant, straight line engine, four different types of gasoline engines, and the usual auxiliary heat power apparatus for fundamental experiments in nozzles, fluid flow, injectors, pressure drops, valve gears, governors, dynamometers, compressed air, meters, calorimeters, and including four 10,000-lb. automatic water weighing machines and a five-ton crane.

More and Better Business Stressed at Convention

Means for Securing Improved Public Relations and Building of Good Will Outlined for 118 Delegates

More and better business, especially through improved illuminating methods, is a thumb-nail resume of the addresses and trend of thought evidenced at the recent joint convention of the Colorado Public Service Association and the Rocky Mountain division of the National Electric Light Association at Glenwood Springs, Colo., Sept. 11-13.

Nationally known figures in the electrical industry gave voice to the big problems confronting the public utilities and especially the central station, while various utility heads presented scholarly papers, broadly economic in character, all of which proved of unusual interest, according to a large number of the convention attendants.

The registration established a new record in attendance with 118 official visitors, including the women folks, few of whom could be induced to attend any of the sessions except the one at night when W. D'Arcy Ryan, director of the illuminating laboratories of the General Electric Company, gave an illustrated talk on Ancient and Modern Illumination to which the public was invited.

Improved public relations and good will building were frequently referred to in various papers and discussions. In comparison to previous meetings it was generally felt that a better grasp and improved conception of public good will had been developed, especially through the activities of the Rocky Mountain Committee on Public Utility Information, under the direction of George E. Lewis.

The "More and Better Business Program" of the N.E.L.A. was presented by S. E. Doane, chief engineer of the National Lamp Works, a member of the Joint Committee on Business Development, who served in the place of H. A. Lane, director of the committee, who was attending another meeting in the East.

J. E. Davidson, vice-president of the N.E.L.A. and general manager of the Nebraska Power Company, gave additional thought to the same subject in his talk on the activities of the national association. Tied-in with this subject were the addresses of H. D. Randall, Rocky Mountain manager for the Gen-

eral Electric Company, and of S. W. Bishop, executive manager of the Electrical Cooperative League in Denver.

Development of commercial lighting and industrial heating loads proved of unusual interest to the central station representatives, judging from the discussion attending papers presented on these subjects by L. A. S. Wood and W. S. Scott, both of the Westinghouse company.

For the first time a representative of the Colorado Editorial Association, E. A. Bemis, president of that organization and editor of the Littleton, Colorado, Independent, was present throughout the convention. In his address on "The Newspaper and the Public Utility" the point stressed was that the newspapers, especially of the more rural type, had to be educated in the same way as the general public, by the utilities themselves.

Other speakers appearing on the program and their subjects were as follows:

"Transportation," E. C. Stenger, receiver of the Denver Tramway Co.

"Communication," Ben S. Read, president of the Mountain States Telephone and Telegraph Co.

"Central Station Merchandising," Fred Hazard, director of sales of the Conlon Washer Co., Cicero, Ill.

"The Banker's Relation to the Public Utilities," Frank J. Denison, vice-president of the Hamilton National Bank, Denver.

"Building Public Confidence," P. L. Thompson, advertising manager of the Western Electric Co., Inc., New York City.

"Adequate Rates," H. B. Dwight, engineer of the Colorado Public Utilities Commission.

"The Future of the Artificial Gas Industry," H. O. Lobell, industrial gas engineer, Henry L. Doherty & Co., New York City.

"Budgeting, a Management Aid," O. A. Weller, budget director of the Denver Gas & Electric Light Co.

"Taxation," Hon. Rodney J. Bardwell, attorney, Denver.

Following the program, short business sessions of both associations were held. Fred Norcross, past president of the Colorado Association, presided, and for the sectional meeting of the N.E.L.A., E. A. Phinney, former president, was placed in charge due to the absence of E. P. Bacon and Arthur

Prager, the president and vice-president.

Before the election of officers, memorials to William J. Barker and Frank W. Frueauff, officers of the Denver Gas and Electric Light Co., and members of both associations who died during the year, were presented.

An amendment changing the name of the Colorado Electric Light, Power and Railway Association to the Colorado Public Service Association was passed. The new officers of this association elected were:

President, Walter F. Brown, traffic manager, Mountain States Telephone & Telegraph Co., Denver; first vice-president, E. C. Stenger, receiver of the Denver Tramway Co.; second vice-president, C. N. Standard, vice-president and general manager of the Denver Gas & Electric Light Co.; secretary-treasurer (re-elected), Miss Minnie B. W. Baker, Denver.

In the Rocky Mountain division of the N.E.L.A. the following officers were elected:

President, J. F. Dostal, general manager of the Colorado Springs Light, Heat & Power Co., Colorado Springs, Colo.; first vice-president, D. C. McClure, electrical superintendent of the Denver Gas & Electric Light Co., Denver; second vice-president, Norman Read, general manager, Colorado Power Co., Denver; treasurer (re-elected), A. C. Cornell, manager of the Western Electric Co., Inc., Denver; secretary (re-elected), O. A. Weller, budget director, the Denver Gas & Electric Light Co., Denver, Colo.

Entertainment during the convention was provided by a committee headed by A. C. Cornell, with J. C. Davidson, B. C. J. Wheatlake, George E. Lewis and J. F. Greenawalt as assistants.

Just before J. F. Dostal, the newly elected president of the Rocky Mountain division of the N.E.L.A., left for New York to attend the budget meeting of the national association, he announced the following appointments:

Section Chairmen

Accounting—E. J. Rosenaner, Southern Colorado Power Co., Pueblo, Colo.

Commercial—E. H. Coe, Colorado Power Co., Denver, Colo.

Public Relations—E. A. Phinney, Jefferson County Power & Light Co., Golden, Colo.

Technical—D. C. McClure, Denver Gas & Electric Light Co., Denver, Colo.

Committee Chairmen

Accident Prevention—F. A. Tewksbury, Denver Gas & Electric Light Co., Denver, Colo.

Relations with Bankers—W. C. Sterne, Arapahoe County Power & Light Co., Denver, Colo.

Rural Lines—Carl Luscombe, Western Light & Power Co., Boulder, Colo.

Wiring—S. W. Bishop, Electrical Cooperative League, Denver, Colo.



Members of the Denver electrical industry, and their families, at the

Seattle Will Reduce Its Power Purchases 5,000 Kw.

The Seattle city council has taken the first step towards realizing on its Skagit River power development investment, by the introduction of an ordinance providing that the present purchase of 18,000 kw. of power from the Puget Sound Power & Light Company for the operation of the municipal street railway, be reduced on Nov. 1, 1923, to 13,000 kw. The 5,000 kw. will be furnished by the city lighting department through its Skagit power supply, which it is expected will be in operation at that time.

The contract under which the city purchased the street railway system provided that the city could reduce its power purchases by units of 5,000 kw., by giving a year's notice in each case. The city also plans to purchase the North Seattle and Fremont substations of the company, after a board of appraisal has fixed their value.

Portland Power Concern Asks For Preliminary Permit

Application for a preliminary water power permit has recently been filed, with the Federal Power Commission at Washington, D. C., by the Pacific Power & Light Company of Portland. This will cover an investigation of the power possibilities of that portion of the Snake River between Lewiston, Ida., and Huntington, Ore. The permit, if granted, will give the company a period of not more than three years in which to prepare plans and specifications for such development as seems desirable.

According to a preliminary survey of this portion of the river, made by the U. S. Geological Survey two years ago, 900,000 hp. could be developed at low water. A trip of investigation was made up the river during July by Lewis A. MacArthur, manager of the company, and Major Howard S. Benson, assistant chief engineer of the Federal Power Commission.

The large amount of the new transmission line construction undertaken in the Northwest this year is indicated by the fact that one insulator manufacturer, the Ohio Brass Co., has already shipped into this district a total of 25 cars of porcelain insulators of all types, principally of high tension, pin and suspension units.



CENTRAL FIRE ALARM STATION OF SAN FRANCISCO

All of the fire alarms sent in from the city of San Francisco are received in this room. At the convention of fire chiefs held in the city recently, an experiment was conducted using radio as a means for turning in alarms. A general alarm was broadcasted from a 200-watt radiophone at the Civic Auditorium and was received at the central station and by a United States Army truck equipped with a receiving set. The truck was speeding along the streets and picked up the message quite easily. The central station radio receiving set may be seen on the top of the marble desk at the left of the picture.

California Counties Toured by Investigation Board

The consulting board to the water resources investigation being conducted by the State Department of Public Works of California has just completed an eight-day tour of the counties of northern California. The members of the board met with many civic bodies while on the trip and heard much first hand information on the views of the northern men upon water development in their counties.

A report is to be made on the means of securing the maximum irrigated area in the state along with a maximum power development. The department has been collecting data for over a year and is now engaged in preparing the report.

The largest offer of timber for sale ever made by the Forest Service is now being advertised. The tract from which it will be possible to cut from fifty to sixty million board feet of timber annually for all time, is located on the Bear Valley watershed of the Silvies River, Malheur National Forest, north of Burns, Ore. The advertisement for bids will run until February 15, 1923.

Cargo of Spruce Shipped From Alaska to New York

Beginning what is expected to develop into a movement that will benefit both Alaska and the Northwest enormously, nearly 500,000 ft. of Alaska spruce arrived in Elliott Bay, recently, for transshipment to New York City in one of the intercoastal steamships. The spruce was cut near Wrangell to the order of the Northwest Trading Company of Seattle and has been sold to the eastern trade by the New York offices of the company.

This is the first full cargo of spruce ever brought from Alaska, although for years the great spruce forests of southeastern Alaska have been regarded as one of the North's big untapped resources.

Purchase by the city of Canby, Ore., of the distributing system of the Mollalla Electric Company is the last chapter in a controversy that has raged for several months. The increase in rates granted the company by the Public Service Commission proved so unpopular that the city refused to renew the company's charter and has now bought out the company's holdings.



annual picnic and outing of the Denver Electrical Cooperative League.

Permit to Develop Middle Fork of Eel River Requested

The Snow Mountain Water & Power Company, of Ukiah, Calif., has filed an application with the Federal Power Commission, for a preliminary permit to construct a reservoir of 25,000-acre-ft. capacity on the Middle Fork of Eel River, near Covelo, Mendocino county, Calif., and to divert water through a tunnel and conduit from the reservoir to a second reservoir having a capacity of 65,000 acre-ft. on Elk Creek. A second tunnel and conduit will carry the water to the company's existing dam, from which the water will be carried through the present conduit to the power house already in operation. Additional units will be added to increase the output 12,000 hp.

A license for a power project on the South Fork of the Eel River near Ukiah, has already been granted.

Eugene to Add Third Unit to Its Generating Plant

Construction by the city of Eugene, Ore., of a third electric generating unit at its Waterville plant will be started as soon as possible and may be finished by next summer, according to C. A. McClain, chairman of the water board. The cost will be in the neighborhood of \$120,000.

The city council has given the water board permission to sell \$47,000 worth of Victory bonds to help pay the cost of the installation, the balance of the cost to be raised by selling some additional bonds.

Utah Coal Freight Rates to San Joaquin Valley Reduced

A reduction of \$1.25 a ton in freight rates from Utah coal mines to San Joaquin valley points was recently made by the Western Pacific Railroad Company and concurred in by the Southern Pacific Company. This reduction in rates will place Utah coal on a par in competition with Wyoming coal in the San Joaquin valley.

This same reduction has been in effect between Utah points and San Francisco for some weeks, and the present reduction will take effect after the expiration of the statutory period of about thirty days more. The rate under the new schedule will be \$6 per ton. This new rate permits Utah mines to compete, on a better basis, with the coal of the Australian and British Columbian mines which is entering San Francisco.

Plan to Lessen Restrictions On Seattle Building

A marked increase in building enterprises in Seattle is expected to follow a "loosening up" of building restrictions proposed by the city building code commission, according to Robert L. Proctor, chairman of the commission, and superintendent of buildings.

The proposed revisions will apply to buildings in the downtown district, where it will be recommended that mill construction be used. At present only fireproof structures are permitted. Also, it will be recommended that an increase from two to six in the number of stories for mill-constructed buildings will be allowed.

"Power on Farm" Is Display at California State Fair

Close to \$550,000 worth of farm equipment was displayed at the 1922 Power on the Farm Exhibit at the California State Fair, held at Sacramento during September. Electrical equipment for the farmer's use in irrigating his land, for mechanically handling his crops and dairy products, was particularly stressed along with the tractor displays.

The combined pumping facilities of the apparatus working at the Fair was 50,000 gal. per min. and all of the electrical devices exhibited were in operation during most of the time that the display was open.

According to men in charge of the Power on the Farm Exhibit, this year's was the best ever held and more real business came from the enterprise than ever before. The farmers were more optimistic and were interested in the equipment, and asked many questions, many even making purchases from the exhibitors.

World's Largest Radio Station To Be Constructed in China

Construction of high powered radio stations in China, at a cost of \$13,000,000, will be started immediately by the Federal Telegraph Company of Delaware. The company is jointly owned by the California Federal Company and the Radio Corporation of America. The enterprise will bring the control of wireless communication, with the Far East, into American hands for the first time and will facilitate commercial communication without any foreign interference of censorship.

Under the construction program of the company, main and secondary stations are to be built at Shanghai. This main station will be the most powerful station in the world. In it will be installed duplicate 1,000-kw. arc transmitters of the Federal type, which will be constructed in the Federal's Palo Alto plant. Subsidiary radio stations will be erected at Canton, Peking and Harbin, thus providing the first wireless communication between the different sections of China.

R. P. Schwerin is president of the new company which will have its headquarters in San Francisco. It is estimated that the construction of the entire project will take about twenty months.

Montana Power Company Will Develop Polson Site

The Montana Power Company plans to start development work on the Polson, Mont., power site as soon as a permit can be obtained, according to F. W. Kerr, president of the company.

Mr. Kerr plans to go to Washington in the near future to confer with the Federal Power Commission, in order to secure action on the application to develop the project. The Columbia River Basin irrigation project plans to use Flathead Lake as a storage reservoir for the purpose of impounding flood waters, but the Montana Power Company officials feel that the two projects can be easily harmonized.

Books and Bulletins

BURNING LIQUID FUEL

By WILLIAM NEWTON BEST. 6 by 9 in. 341 pages. 316 figures. \$5. U.P.C. Book Company, Inc., New York.

This is a practical treatise on the perfect combustion of oils and tars embodying the data from thousands of tests extending over a period of thirty-three years. The language is plain and the book is readily understandable to student, highly trained engineer, chemist or mechanic. The calorific value of fuel oil as compared to coal is shown for many industries. The data given in the tables are the results from actual tests. The many photographs and diagrams are from actual installations. The book will be useful to anyone who is concerned with fuel economy in the industrial plant, whether he be the executive or the boiler room superintendent.

PRINCIPLES OF MECHANICAL REFRIGERATION

By H. J. MACINTYRE, S.B., M.M.E., associate professor of refrigeration, University of Illinois. 5½ by 2 in. 252 pages. 114 figures. \$2.50. McGraw-Hill Book Co., Inc., New York.

This is a book on practical refrigeration for practical steam and refrigeration engineers, written somewhat in the form of lectures and with a frank expression of personal opinion regarding designs and types of machinery and equipment. Very little mathematics is used in presenting the subject and the action of refrigeration is explained by analogies to steam machinery and steam cycles. The entire field of refrigeration is covered in an elementary manner. While written primarily for operating engineers, the book will undoubtedly prove valuable to others who are in search of knowledge on the subject. The material in the book first appeared in the form of a study course in "Power."

ELEMENTS OF RADIO TELEPHONY

By WILLIAM C. BALLARD, JR., assistant professor of electrical engineering, Cornell University. 5 by 7 in. 132 pages. 51 illustrations and diagrams. Flexible binding. \$1.50. McGraw-Hill Book Co., Inc., New York.

The phenomenal popularity into which radio telephonic broadcasting has sprung has been the means of interesting thousands in radio transmission. To the non-technical reader the transmission of speech and music with no visible means of intercommunication is somewhat of a mystery and this book has been written with a view of enlightening the layman in the basic principles of the subject. The book accomplishes three results. It presents in a simplified form a brief discussion of what happens when messages are sent and received by the radio. It gives a brief description of the apparatus required to produce these effects and it offers unbiased information for the experimenter who desires certain effects and does not know what apparatus is necessary. This is an exceptionally good book for the amateur.

Meetings of Interest to Western Men

Contractors and Dealers to Hold National Convention

Cincinnati, Ohio, is to be the scene of the twenty-second annual convention of the National Association of Electrical Contractors and Dealers on Oct. 11-13. An educational program has been prepared for the members of the association who are able to be in Cincinnati for the three days.

Speakers from all over the United States will address the meetings of the convention. E. H. Eardley, chairman of the Engineers' Committee, and chairman of the Contractor-Dealers' Association of Salt Lake City, will be the speaker from the western states. His address will be on Specific Specifications.

Headquarters of the convention will be at the Hotel Sinton.

Successful Convention Held By Southern Idaho Men

Thirty-five members attended the semi-annual convention of the Southern Idaho Electrical Contractor-Dealers, recently held in the Commercial Club rooms in Hailey. George Pickup, of Idaho Falls, president of the association, Thad Stevens of Boise, secretary, and three vice-presidents were among those present.

An address of welcome was made by Mayor W. P. Fowler, followed by a response by President Pickup. J. C. Painter, manager of the radio department of the Capital Electric Company of Salt Lake City, delivered an address on radio development, showing cost of service that electricians are required to pay, how to figure overhead expense and profits, and how necessary it is to follow certain methods in order to make a profit.

A paper by W. R. Putnam, vice-president of the Idaho Power Company of Boise, was read by J. F. Orr, also of the Idaho Power Company.

Kenneth A. McIntyre, of the Society for Electrical Development, Inc., delivered an address on "Publicity by Co-operation," and Laurence W. Davis, special representative of the National Association of Electrical Contractor-

Dealers, addressed the convention on "Building the Electrical Business Through Association."

The next convention of the association will be held in Boise some time next winter. Walter Bauchman of Idaho Falls was elected secretary of the association to fill the vacancy caused by the resignation of E. C. Stevens.

Electrical Associations Active in Portland Territory

The local sections of the A.I.E.E. and N.E.L.A. are starting out enthusiastically on the new year's work. At a recent joint executive meeting of the two societies, chairmen were elected to head the membership, program and entertainment committees. The first meeting of the two societies will be held early in October.

D. W. Proebstel, of the Portland Railway Light and Power Co., was elected last spring to become chairman of the A.I.E.E. for the ensuing year, and J. S. Groo of the Northwestern Electric Co. holds the corresponding position with the N.E.L.A.

Electric Club of Oakland Holds Most Successful Meeting

One of the most successful meetings in the history of its existence, was held by the Electric Club of Oakland, Calif., on Sept. 18. The meeting was devoted to discussions on the progress of home wiring development and its possibilities. Garnett Young of the Garnett Young Company of San Francisco was the main speaker.

Officers of the San Francisco chapter of the American Institute of Architects, members of the Oakland Real Estate Board and of the Builders' Exchange of Alameda County also made remarks upon electric development.

Feature Addresses Attract L. A. Electric Club Members

Three feature addresses marked the Get-Together Dinner of the Electric Club of Los Angeles, held at the Los Angeles City Club on Sept. 13. Laurence W. Davis, special representative of the National Association of Contrac-

tors and Dealers, Kenneth A. McIntyre, special representative of the Society for Electrical Development, Inc., and R. E. Fisher, chairman of the Advisory Committee, California Electrical Cooperative Campaign, were the three men who presented the feature talks of the evening.

Water and Power Act Condemned at Gas Convention

That the proposed Water and Power Act would deprive the state of California of \$1,000,000,000 of taxable property in addition to placing the spending of \$500,000,000 in the hands of a political board of five men, was the gist of a talk made by W. E. Creed, president of the Pacific Gas & Electric Company at the closing session of the Pacific Coast Gas Association's convention. Prominent gas men from the entire Pacific Coast region were present at the convention, which was held at Santa Barbara, Calif.

Just prior to the banquet the following men were elected as officers of the association for the coming year:

Frank S. Wade, Southern Counties Gas Company, Los Angeles, president; H. R. Basford, H. R. Basford Company, San Francisco, vice-president, and William M. Henderson, secretary-treasurer, re-elected. The directors were: W. S. Yard, vice-president, Pacific Gas & Electric Company, San Francisco; T. P. McCrea, secretary, Los Angeles Gas & Electric Company, Los Angeles; L. M. Klauber, general superintendent, San Diego Consolidated Gas & Electric Company, San Diego; D. G. Young, vice-president and general manager, Tacoma Gas & Fuel Company, Tacoma; G. B. Williams, mechanical engineer, Southern California Gas Company, Los Angeles; D. H. McCorkle, Hall Furnace Company, Oakland, and E. L. Hall, general superintendent, Portland Gas & Coke Company, Portland.

Proposed Water and Power Act Condemned by Engineers

The San Francisco Chapter of American Association of Engineers, at a special meeting held on Sept. 5, at the Palace Hotel, San Francisco, unanimously voted disapproval of the proposed California Water and Power Act.

This action followed the report given by the special committee appointed last February to make a thorough investigation of the measure. This committee consisted of J. J. Rosedale, chairman, construction engineer; E. E. Carpenter, consulting engineer; Chas. H. Lee, consulting hydraulic engineer; George Mattis, consulting engineer, and Donald M. Baker, hydraulic engineer.

The report set forth the following conclusions concerning the Act, which were endorsed by the Chapter:

First: That the Act is not needed.

Second: That the state, operating under the proposed Act, could not permanently furnish power to consumers more cheaply than privately owned utilities.

Third: That the workability of the Act is open to serious question.

The report further emphasized the points that the Act would prove a dangerous instrument by creating a "one man power" board with unlimited opportunities for political activities and involves the principle of unjust taxation since all the people of the state must pledge full faith and credit for the payment of interest and principal of bonds which would benefit only local areas.

COMING EVENTS

ROCKY MOUNTAIN ELECTRICAL EXPOSITION

Salt Lake City, Utah—Oct. 2-14, 1922

AMERICAN SOCIETY OF CIVIL ENGINEERS

Annual Meeting—San Francisco, Calif.—October 4-8, 1922

INVESTMENT BANKERS ASSOCIATION OF AMERICA

Annual Convention—Del Monte—October 7-11, 1922

NATIONAL ASSOCIATION OF ELECTRICAL CONTRACTORS AND DEALERS

Annual Convention—Cincinnati, Ohio—October 9-14, 1922

NATIONAL ASSOCIATION OF RAILWAY AND UTILITY COMMISSIONERS

Annual Convention—Detroit, Mich.—Nov. 14, 1922

Fred H. Fowler, district engineer for the United States Forest Service in California and Nevada, has resigned to open an office in San Francisco as a consulting engineer. Mr. Fowler was born in Montana and received his early education in Denver, coming to California in 1901. He was graduated from Stanford University with the class of 1905. His first position was with the



FRED H. FOWLER

J. G. White Engineering Corporation on the Laguna Dam of the Yuma Irrigation District in Arizona. Later he traveled extensively in Egypt studying irrigation systems. Subsequently he was city engineer of Mayfield, Calif., a professor of civil engineering at Stanford University and hydrographer for the Bay Cities Water Company. He entered the Forest Service in 1910 as assistant to the chief engineer. He was appointed district engineer for California and Nevada in 1913 and with the organization of the Federal Power Commission, was made representative of that organization. One of his outstanding accomplishments is a compilation of data on the developed water power in California, which will shortly be published by the U. S. Geological Survey. The report required twelve years to prepare.

Harry Sessions, of the Southern California Edison Company, is now enroute to various industrial centers of the East where important equipment is being manufactured for the company's various installations. He will spend several months inspecting this material and gathering economic data of importance to the West in installation and operation of power plant equipment.

A. N. Kemp, vice-president in charge of finance and accounts of the Southern California Edison Company, is spending several weeks in eastern business centers.

R. G. Gentry, commercial manager of the Denver Gas & Electric Light Company, was re-elected treasurer of the Colorado Merchants' and Manufacturers' Association at the annual convention of that organization recently held at Sterling, Colo.

R. L. Hearn, formerly with the Hydro Electric Commission of Ontario, Canada, is now hydraulic engineer for the Washington Water Power Company, reporting to Victor H. Greisser of Spokane, chief engineer.

Personals

Emmett N. Britton, assistant to the general manager of the San Joaquin Light & Power Corporation, is a recent San Francisco visitor.

Rufus G. Gentry, commercial manager of the Denver Gas and Electric Light Company, is one of the incorporators of the Colorado Industrial Exposition and Prosperity Carnival, which will be held in Denver next February under the auspices of the Colorado Merchants and Manufacturers' Association, of which Mr. Gentry is the treasurer.

William E. Gunther, formerly the Denver city salesman of the New England Electric Company, has returned to his old position as assistant to Clark Rider, manager of the Denver Electrical Company.

J. C. Hancock, manager of the Clear Creek territory of the Colorado Power Company, was one of the backers of the "Days of '59" celebration held at Idaho Springs, Colo., September 2-4.

R. A. Hart, federal drainage engineer, has just returned to Salt Lake City from a two weeks' trip through Idaho and Montana, where he visited a number of proposed drainage projects with a view to making recommendations for starting same in the immediate future. Among those which he visited was one at Preston, Idaho, and another immediately west of Yellowstone National Park in Montana.

Fred Hazard, sales promotion engineer of the Conlin Manufacturing Company, Chicago, manufacturers of the Western Electric Washing Machines, is spending several weeks in Los Angeles and southern California in the interests of his company.

Prof. C. W. Lawrence has been appointed director of Los Angeles Chapter, American Association of Engineers, to succeed J. B. Lippincott, who resigned because frequent trips out of the city made it impossible for him to attend the meetings regularly.

Guy Talbot, president of the Pacific Power & Light Company and the Portland Gas & Coke Company, Portland, Ore., attended the recent convention of the Pacific Coast Gas Association held at Santa Barbara, Calif.

J. E. Strange, assistant general manager of the Pacific Power & Light Company, visited several days in San Francisco and Los Angeles before attending the Santa Barbara convention of the Pacific Coast Gas Association.

Major-General George W. Goethals, noted engineer and builder of the Panama Canal, spent two weeks in California recently conferring with associates in the engineering office which he recently opened in San Francisco.

George Boring, manager of the Portland office of the Pacific States Electric Company, is a recent San Francisco visitor.

George L. Myers, assistant to the president of the Pacific Power & Light Company, was a recent San Francisco visitor and later was in attendance at the Santa Barbara Convention of the Pacific Coast Gas Association.

Raymond Bennett, formerly general manager of the Douglas Light Company, of Douglas, Wyo., and more recently connected with the Sheridan County (Wyo.) Electric Company, has been appointed power apparatus specialist of the Western Electric Co. in the Rocky Mountain district. Mr. Bennett is a graduate of the electrical engineering department of Purdue University. He is now on a tour of the eastern plants and branches of the company and will shortly return to his headquarters at Denver.

J. H. McLellan, western manager of Barlow and Selig Manufacturing Company, Ripon, Wis., spent several weeks on the Pacific Coast recently studying market conditions and making preparations for the distribution of his company's products.

W. R. Lyall of San Francisco, Pacific Coast representative of the D & W Fuse Company, visited Los Angeles recently looking after the interests of his company.

E. O. Eastwood, professor of mechanical engineering at the University of Washington, with headquarters at Seattle, is a recent San Francisco visitor, having come to the South on board a Standard Oil tanker which has been under trial at sea for the first time.

P. L. Goddard, executive secretary of the Rocky Mountain Electrical Co-operative League, is one of the active heads of the organization of electrical men in Salt Lake City who have developed the plans for the huge electrical exposition which opens in that city on October 2. The exposition promises to far outstrip anything of its kind ever held in the West, both in size and in the number of visitors. It will be devoted strictly to electricity. Mr. Goddard joined the Rocky Mountain Co-operative League in April, having been with the Hawaiian Electric Company previous to that time. He entered the electrical industry in 1913 with the



P. L. GODDARD

Phoenix Construction Company and was later with the Utah Power and Light Company. While in Hawaii he assisted in the organization of the Mid-Pacific Electrical Co-operative Campaign in Honolulu. The Rocky Mountain Electrical Exposition is one of the largest undertakings yet attempted by any of the cooperative organizations in the West.

Andrew M. Lockridge, formerly with the Hamilton Beach Manufacturing Company for four years as travelling salesman, is now connected with the Pacific States Electric Company in Southern California.

Saling H. Wolfe, formerly with Western Radio Electric Company, and radio instructor in the United States Navy for a year and a half, is now specialty salesman in charge of the radio department of the Pacific States Electric Company's Los Angeles office.

Robertson Farmer, formerly secretary of the Southern District, California State Association of Electrical Contractors and Dealers, and more recently connected with the Radio Supply Company of California, has recently left for the Middle West and expects to take up field work with the National Association of Electrical Contractors and Dealers.

C. P. Bowie, engineer in charge of the Petroleum Office of the United States Bureau of Mines in San Francisco, left on August 31 for Washington, D. C. Mr. Bowie plans to be absent from San Francisco for about two months during which time he will visit some of the eastern oil fields.

Chas. E. Eveleth, executive engineer of the turbine department of the General Electric Company, has been appointed assistant manager of the Schenectady Works of the company, the appointment dating from Sept. 1.

J. B. Black, formerly general sales manager of the Great Western Power Company, and for the past few months acting general manager of that concern, has been appointed to the post of general manager. Graduated from the University of California in 1912, Mr. Black's career with the California company has been a phenomenal one. Entering the commercial department he rose rapidly, being appointed general sales manager in 1918. He is one of the active leaders of the electrical in-



J. B. BLACK

dustry in the West. At the present time he is president of the Pacific Coast Electrical Association, having won that distinction at the convention of that organization last June. He is also a member of the advisory committee of the California Electrical Cooperative Campaign. Mr. Black is one of the youngest central station executives in the country.

Arthur Ward Fox, formerly secretary and assistant treasurer, has been elected to the office of vice-president and general manager of the Johns-Pratt Company, Hartford, Conn. Mr. Fox has been associated with this company for sixteen years, starting as a clerk and working up through the various departments, becoming assistant treasurer and factory manager and later secretary.

James A. Davis, chief engineer of the state highway division of Washington, recently resigned after nine years' service, to join the Carlson Construction Company of Spokane. Mr. Davis is succeeded by George T. McCoy, former assistant chief engineer.

Charles W. Tubby, Seattle sales manager of the Worthington Pump & Machinery Corporation, has been elected chairman of the western Washington section of the American Society of Mechanical Engineers, heading the new group of officers who will serve the western Washington section during 1922-23.

L. B. Johnson, of the Salt Lake office of the General Electric Company, is spending a month in eastern business centers, during which he will visit the company's plants at Lynn and Pittsfield, Mass., Schenectady, N. Y., Harrison and Newark, N. J. and Ft. Wayne, Ind.

W. N. Kapus, president of the Northwestern Gas & Electric Equipment Company of Portland, Ore., was one of the delegates from the Pacific Northwest to the recent convention of the Pacific Coast Gas Association at Santa Barbara, Calif.

B. E. Rowley, Salt Lake City district manager for the Edison Electric Appliance Company, recently visited eastern business centers. While in the East he attended the conference of district sales managers of the Edison Electric Appliance Company at Chicago.

J. E. Davidson, vice-president of the National Electric Light Association and vice-president and general manager of the Nebraska Power Company of Omaha, gave an interesting address recently before the Denver Civic and Commercial Association on the subject of "Your Electric Service Company."

A. M. Bohnert, for the past three years high tension sales engineer for the Ohio Brass Company in the East, has been appointed representative of that company in the Intermountain district with headquarters in Salt Lake City. Before going with the Ohio Brass Company, Mr. Bohnert was in the engineering department of the Pacific Gas & Electric Company for nine years. During the war he served as a captain of engineers in the office of the chief of engineers. Mr. Bohnert was assistant officer in charge of the electrical and mechanical section of the A.E.F.

J. S. Brittain, formerly connected with the Southern Sierras Power Company as transportation manager, is now connected with the Los Angeles office of the Westinghouse Lamp Company, assisting L. W. Davis, district lamp manager in that territory.

A. H. Seep, vice-president of the Mine and Smelter Supply Company, has been designated as an associate chairman of the campaign committee to raise a million-dollar building fund for Regis college in Denver.

Walter E. Jones, district manager of the Economy Fuse & Manufacturing Company, Seattle, who was recently elected president of the newly organized Seattle Electric Club, as active head of this aggressive organization, assisted in putting over Electric Week in Seattle beginning Sept. 22. Mr. Jones originally engaged in the banking business in Ohio but in 1912 for-



WALTER E. JONES

sook this field, coming to Portland, Ore., where he identified himself with the Johns-Manville Company, as department manager of this corporation's electrical department. In 1914 he came to Seattle for the Johns-Manville Company, remaining in the concern's employ for three years. In 1917 he was made district manager of the Economy Fuse & Manufacturing Company with headquarters in Seattle. In this position he has charge of sales and service for his company in the 10 western states. Mr. Jones was responsible, in a great measure, for the organization of the Seattle Electric Club which is a reorganization of the old Seattle Electrical Contractor-Dealers' Association.

Ottomar Hamel, chief counsel of the United States reclamation department, is in the west inspecting various irrigation projects. He will inspect the Strawberry valley irrigation project, and other reclamation projects while in Utah. Mr. Hamel characterized the Smith-McNary bill for the reclamation of waste lands in all sections of the country by the federal government as one of the most important and constructive measures now pending in Congress. He declared that the Western States Reclamation association is deserving of great credit for the efficient manner in which it is bringing the merits of the bill before the people.

George W. Bixler of the Denver Gas & Electric Light Company has been transferred to the publicity department of that company to serve during the absence of Frank Kivel.

Nathan Levinson, radio specialist, Pacific district of the Western Electric Company of New York, is in Los Angeles studying local conditions. Mr. Levinson has had considerable experience in telegraphic and telephonic communication and his visit will be of material benefit to those interested in broadcasting.

The Meadows' Manufacturing Company, of Bloomington, Ill., manufacturers of the Meadow Lark Washing Machine, has just secured the services of H. L. Barker, formerly sales manager for the Nineteen Hundred Washer Company. The company has placed F. S. Robertson as western sales manager with headquarters in San Francisco. Over 100 carloads of washers are being sold every year on the Pacific Coast by the company.

Pass & Seymour, Inc., of Solvay, N. Y., are placing on the market at this time, three devices for use with ceiling lights, ceiling bands and in fact any standard or special unit. They fit the standard 1½-in. throat of the ceiling units and provide individual control.

The Pacific Power & Light Company, of Portland, is putting on a Thor washing machine campaign during this month. This campaign will be under the direction of V. H. Moon, formerly district manager for the company at Pomeroy, Wash. Mr. Moon has recently been placed in charge of merchandise sales for the company with headquarters in Portland.

The National Lamp Works of the General Electric Company, Cleveland, Ohio, has announced the rules for a "Lamp the Home" contest among electric dealers who have had that company's lamps stocked prior to the announcement of the contest. Twenty-one prizes will be given and the score will be based on the dealer's window display, store interior set-up and lighting sales reminders, word-of-mouth solicitation and mail campaign.

The Roller-Smith Company, of New York, has prepared for distribution bulletin No. B-820, which describes its PV ammeters and voltmeters and COD indicators.

The Central Electric Supply Co., the most recently organized jobbing house in Denver, has secured additional storeroom for the display of lighting fixtures which have been recently added to its accounts.

The Electric Controller & Manufacturing Company, Cleveland, Ohio, has just issued Bulletin No. 1045. This bulletin gives complete specifications and descriptions of their Type NC squirrel cage induction motors.

The Holophane Glass Company, New York, N. Y., has just issued a 36-page illustrated booklet entitled "Modern School Lighting." This booklet contains complete tables of utilization constants for all conditions of room size and decorations. A simple form of reflectometer is included so that the reflection factor of paints ordinarily used for ceiling and walls in school buildings can be easily determined.

The Kyle Electric Co., recently reorganized as a contractor-dealer firm in Pueblo, Colo., has taken additional storeroom which is being made into an attractive fixture display space.

Hubbard & Company of Pittsburgh, through E. Wessel, newly appointed western sales manager, is planning on placing a factory representative in Denver.

James G. English, of Los Angeles, formerly with the Golden State Electric Company, has gone into the electrical contracting business on his own account and is located at 133 West Washington Street.

Manufacturer, Dealer, and Jobber Activities

The A.B.C. line of laundry equipment will again be handled in Colorado by the Cahn-Forster Electric Co. of Denver, through arrangements recently made by Altorfer Brothers, the manufacturers of the line.

A special campaign on turnover toasters is being featured by the Westinghouse Electric and Manufacturing Co. in conjunction with the Western Light and Power Co. at its northern Colorado and Wyoming service centers. Small initial and deferred payments to be charged on the monthly bills for light and power service is proving a marked inducement in the sale of the toasters, it is said.

The Werner Electric Water Heating Company, Los Angeles, has just closed a lease on the brick building at 1221 Santa Fe Avenue. This firm holds the patent rights throughout the country for the Werner Electric Water Heaters, which are manufactured at Marion, Ohio, and are shipped to Los Angeles for assembling and distribution. According to the officials of the corporation, its present assembling plant, as well as its office in the H. W. Hellman Building, have become inadequate for the increased business, and it was found necessary to secure larger quarters in which the offices, salesroom and assembling plant could be combined under one roof.

Scott Bros. Electric Co., of Denver, has organized the Oil-O-Matic Sales Co. as a separate feature of their electrical business in the sale and distribution of a new type furnace and boiler heater using distillate or crude oil as fuel with electric control.

The Esterline-Angus Company, Indianapolis, has recently issued several bulletins and booklets on its graphic meters, which show records made upon the equipment manufactured by that company. These may all be obtained by addressing the company's main office.

The George A. Gray Company, manufacturers' representatives with headquarters in San Francisco, recently moved into new and commodious quarters at 910 Howard Street. The new building, which was built especially for the company, is two stories high, contains offices, warehouse room and storage space.

Representation of the Hamilton-Beach Co. in Colorado, Wyoming, and New Mexico has been changed through the resignation of Norman Ives, formerly in charge of the northern territory of the section outlined. N. E. Goodman, the southern representative, will now cover all the territory with headquarters at Denver.

The Russel Electric Company, of Chicago, has just put on the market a new "Hold Heet" electric percolator. The company plans to supply leaflets which can be imprinted with the names of dealers who carry the percolators in stock.

The Hazard Manufacturing Company, of Denver has found that the increasing business has called for additional sales representation in the Rocky Mountain region. E. P. Kipp, district manager, has added Maynard Felix to the sales staff.

Electric Materials Company, Pacific Coast jobbing house, has recently opened a Seattle office in the Hickley Bldg. The office will be in charge of R. F. Robinson, manager. The Electric Materials Company handles the products of the Bates Expanded Steel Truss Company, the Roller-Smith Company and other eastern manufacturers.



JUST BEFORE THE RACE

These three enthusiastic members of the Seattle Electric Club are waiting for the girls' race at the recent picnic and outing held by that organization. Roy Worth, manager of the Seattle branch of the Pacific States Electric Company (left), and W. M. Meachum of Meachum & Babcock (center) are trying to convince J. J. Agutter of J. J. Agutter & Co., former president of the club, that he should stretch a rope knee-high across the finish line. Mr. Agutter is demurring as he is a believer in "kodaking as he goes" and sees a "picture ahead."

Business Outlook in Western Market Centers

Reflecting the Trend of Community Thought on Conditions and Events Affecting Business and Industrial Activities Throughout the West

Compiled and edited for the Journal of Electricity and Western Industry by correspondents in all principal Western cities.

SAN FRANCISCO

Building continues active in San Francisco with a strong demand for real estate, especially in the business districts. Large construction plans have been made for school buildings and other structures. State building and loan associations in the state have increased from 98 to 109 during the fiscal year, while their total assets have increased 14½ per cent. The jobbing trade is fair.

The prune and peach harvest is nearly completed, the yield being above normal and of excellent quality. The harvesting of the rice crop should start within a few days as the warm weather has favored an early ripening of the crop.

Retail merchants report that in the public mind there is still apprehension lest further trouble arise from the recent railroad strike. A slight decline in sales resulted from this. Wholesalers report that retailers are buying for their immediate needs only.

The increase in the price of sugar has aided the Hawaiian growers greatly. Manufacturers and exporters catering to the Philippine and Hawaiian island trade report trade conditions better in both localities.

Quite a large quantity of California products is being shipped to the East by boat through the Panama Canal. This is caused by the car shortage which has hit the entire Pacific Coast.

The underlying business conditions are generally good, throughout the city.

LOS ANGELES

The first fifteen days of September saw 2,156 permits issued with an approximate valuation of \$5,162,645 which corresponds with the same period of 1921 as an increase of approximately 33 per cent. The total number of permits issued for the year to date is 32,100 with an approximate valuation of \$84,209,804, which is an increase over the previous year of approximately 60 per cent.

In southern California conditions in agriculture, trade and industry, are as favorable as usual and give no promise of receding from their present position. The only threatening feature of the situation is the rail strike, which has interfered with the movement of the crops and which may cause considerable loss, unless relief comes soon; it is to be hoped that the recent agreement on the part of some of the railroads will alleviate this condition. Considering production prospects alone, however, agricultural conditions in southern California are excellent.

Manufacturing output throughout the opening six months of the year dis-

played a steady increase, but slowed down during the months of July and August. In some industries, particularly the automobile and building industries, activity has been unusually pronounced this summer in spite of the usual seasonal recessions.

Evidence of the plentiful supply of money awaiting investment opportunity, was given in the demand for the recent issue of treasury certificates and which form a temporary vehicle for idle money which is safe, and returns a good income.

DENVER

If confidence is any criterion, then business is strongly entrenched in this territory. Reports from bankers, building interests, wholesale houses, and manufacturers all show a healthy condition. Only the retailer in certain lines claims that sales are not increasing.

Crop movements are progressing and bank balances are increasing. For August, Denver topped the list of all cities with least recorded unemployment. Postal receipts showed an increase of 13.12 per cent over August, 1921. Building permits are not decreasing.

Several of the larger electrical jobbers show a big increase in sales during the past 60 days. This covers transmission materials, equipment, and house wiring supplies. However, the contractor-dealer reports extreme competition on small wiring jobs and slow demand for appliances.

SALT LAKE CITY

Salt Lake City is in a fair way to equal if not exceed the greatest building record it has ever known. In 1916, the record year, approximately \$7,550,000 was expended on construction within the city. The first eight months of 1922 find the 1921 mark of \$5,010,229 equaled and a prospect of more than \$2,000,000 additional building assured before the end of the year. At present there are 480 buildings in course of construction, residences included. While home building has shown remarkable strength, school, office and club structures constitute the more imposing share.

The mining industry is continuing to thrive, and this is in a very satisfactory condition. The Utah Copper Company is shipping an average of 270 cars of ore daily to its Arthur mill, and is employing about 1,500 men.

Retail business in general is showing a fair improvement, and there seems to be a good circulation of money. Electrical dealers are conducting intensive campaigns to sell seasonal appliances such as air heaters and vacuum cleaners.

SEATTLE

There is a strong demand from all sections for all grades of lumber, and yard stocks were never as low in years as they have now fallen. The car situation which has been troubling many manufacturers is still unsatisfactory, especially on the branch lines of the railroads, where in some instances, manufacturers have been unable to obtain over 15 per cent of their normal car requirements. This is not confined to lumber manufacturers, but to manufacturers in any line of industry in the more remote sections. Lumber orders are pouring in, and the industry is in a very encouraging condition at present.

Seattle has passed through a crisis in its construction program which threatened to bring practically all improvement and building work to a standstill, due to the inability to secure cement as a result of scarcity of freight cars. It is expected that ample quantities will be forthcoming in the future.

Electrical contractors report a very good demand for appliances, and particularly for wiring appliances used in new building. Local men report a growing interest in specialized electrical equipment in the building of homes, and believe Seattle Electric Week will be a tremendous business builder in this line. A shortage in stocks of conduit and wire exists as a result of the coal and railroad strikes, but this is not expected to become serious. A number of the new apartments are installing electric ranges and vacuum cleaners, and this has stimulated range sales throughout the summer. Vacuum cleaners and washing machines have also been active.

PORTLAND

There are many strong indications of improved business conditions. Bank clearings, building permits, postal receipts, lumber manufactures and other less important factors all show healthy gains over the corresponding period of a year ago. The power companies report a 15 to 20 per cent larger sale of energy.

The electric supply sales continue good, due to the large improvement programs being carried on by the local power companies as well as to the great activity in building of all kinds. The outlook is good for a big fall business. Collections are slightly easier.

Portland is feeling the effects of the railroad strike to some extent, in delayed shipments, although the situation was never alarming. The tendency of the shippers has been to favor ocean carriers during the strike period.

Construction News and Industrial Developments

Suggesting to the Engineer, Contractor, Manufacturer, Dealer, Agent and
All Business Men Opportunities for New Business

Bridges

Calif., Riverside—The board of supervisors has let the contract for the construction of the five-span ornamental concrete bridge over the Santa Ana River at the foot of Mt. Rubidoux to the De Ward and Cobhan Construction Company of San Diego, at its bid of \$99,500. The structure will be of the mission type.

Calif., Redding—The board of supervisors has awarded to F. H. Neilson, of Orland, contract for building the bridge to span Fall River near Glenburn, on a bid of \$33,656. The structure will be 300 ft. long and will be built of reinforced concrete.

Colo., Denver—Contract for the construction of a new concrete bridge at Federal Boulevard and West Thirteenth Avenue was awarded by the city to R. M. Larson, local contractor. The bid accepted was for \$26,706.16.

Ore., Wheeler—The county court awarded the Portland Bridge Co. the contract to build a bridge and approaches across the Nehalem Bay at Todd's for \$76,500. Only two bids were filed with the court. The span will be of steel, 20 ft. wide and 234 ft. long. The three piers will be of concrete.

Ore., Portland—Proposals for the construction of a new high bridge to replace the present Burnside bridge and a viaduct to be known as the Ross island bridge, south of Hawthorne Ave., will be submitted to the voters at the November election. This was decided at a joint meeting of city and county commissioners. The proposed new Burnside bridge will cost about \$3,000,000. The Ross island bridge, according to present estimates, will cost \$1,000,000 exclusive of approaches.

Ore., Baker City—Three new bridges are planned by the city commissioners of Baker. Heavy traffic over the Campbell bridge demands a stronger bridge and this bridge will be replaced with a strong steel bridge. The Madison Street bridge will be a steel bridge with concrete abutments instead of a full concrete bridge as was planned at first. For the Estes Street bridge all material that can be used from the Campbell Street bridge will be utilized. The bridges will be built with substantial concrete piers and abutments.

Buildings (Industrial)

Calif., Los Angeles—Lynch-Cannon Construction Co., Chapman Bldg., has been awarded a contract at \$138,800 for erecting a car repair shop on 54th St., between So. Park Ave. and San Pedro St., for L. A. Railway Co. Brick walls, 94 x 440 ft., steel columns and roof trusses, comp. roofing, metal skylights, steel sash, steel rolling doors, 100 steel lockers, etc. Plans by engineering dept. of the railway company.

Calif., Los Angeles—C. L. Peck, 721 H. W. Hellmann Bldg., has the contract to erect a 5-story reinforced concrete warehouse at 4th and Alameda Sts., for Bekins Fireproof Storage Co. Plans by Engineer Edw. T. Flaherty, 435 I. W. Hellman Bldg. Brick walls, reinforced concrete construction, face brick front, comp. roofing, steel sash, factory maple, and concrete floors, steel beams, electric freight elevators, steel rolling doors.

Calif., Los Angeles—Union Iron Works, 5125 Santa Fe Ave., has the contract for a 1-story factory building, 80 x 116 ft., on E. 28th St.

near Naomi Ave., for Martin Iron Works. Steel frame and roof trusses, brick and corr. iron rfg., \$25,000.

Calif., El Monte—Adams Record Cabinet Corp. plans to build a factory for the manufacture of phonograph record cabinets. The chamber of commerce will assist in raising capital for the new plant. Work is planned to start within two weeks.

Calif., Long Beach—W. J. Burgin, 1100 Redondo Ave., has the contract for a 1-story box factory bldg., at 1850 Cherry Ave., Long Beach, for the Long Beach Box Company. Foundation 130-ft. front, concrete walls, Lupton steel sash, cement floor.

Calif., Menlo Park—Rumor has it that the National Ice Cream Co. has secured a lot where it will build a factory for its products.

Calif., Sacramento—Erection of a large warehouse for the storage and manufacture of poultry supplies will be begun at Seventeenth and R Streets within the next few days by F. F. Smith & Company. The construction will be of concrete and corrugated iron.

Calif., North Sacramento—The California Packing Company purchased a lot occupied by the Epworth Methodist Church. The building will be moved to the rear of the lot and a large brick building will be constructed for the almond packing plant.

Calif., Oakland—The United States Light & Heating Corporation of Niagara Falls, N. Y., makers of "U.S.L." batteries, has purchased two acres of land on 89th Ave., between Harriman St. and Sunnyside Ave., where a factory will be built and equipped for the manufacture of automobile and radio storage batteries.

Calif., Sacramento—Preliminary plans for the first unit of a refinery for the Pacific Coast Borax Co. have been prepared by Albert C. Martin, architect, and Frank L. Stiff, associate. The building will be erected at Los Angeles harbor, two stories in height, 250 x 400 ft., and of steel frame construction.

Calif., Calexico—Ice Plant—Ground has been broken here for an \$80,000 addition to the ice plant of the Imperial Ice and Development Company. Construction is expected to be completed in sixty days. With the completion of this building the plant will have a storage capacity of 11,000 tons of ice.

Colo., White River—The first carbon black manufactory in the state will shortly be built here by the Rio Blanco Carbon Co., according to Thomas J. Dixon, president of the company. Immediate plans call for one unit with a warehouse to be located at Rifle, Colo. The company has been financed to the extent of \$200,000 through the efforts of its main office at 816 Symes Bldg., Denver.

Colo., Denver—The main unit of the Stoll Manufacturing Co., which was destroyed by fire early in September, will shortly be replaced at a cost of \$20,000. Electrical equipment used in the making of automobile bodies and motor camping equipment is included in the estimate.

Colo., Denver—Excavation for the \$2,000,000 packing plant of the Mountain States Packing Company, adjacent to the union stockyards, has just been started. The plant will be of steel and concrete construction, approximately 200 x 400 ft. in size, five stories high, and will be electrically equipped throughout. Cold storage facilities will also be provided, according to

Charles F. Kamrath, president and general manager, who is in charge of construction.

Ore., Portland—The Peninsula Lumber Co. will start, within six months, construction of a new \$500,000 modern sawmill below its present plant on the Willamette River, according to announcement made by F. C. Knapp, president of the concern.

Ore., Independence—The Cleveland and Hedges mill at Pardee is being remodeled preparatory to resuming operations, and has been taken over by W. T. Grier of Salem, Ore. Plans for expenditures call for about \$100,000, including additional equipment and changes made in the planing mill.

Wash., Centralia—The sawmill, planing mill and other portions of the H. H. Martin Lumber Company's plant in Centralia were destroyed by fire recently, with loss of \$75,000. Plant is to be rebuilt immediately.

Wash., Seattle—The plant of the North Coast Dry Kiln Company is to be enlarged by construction of an addition which will house a large machine shop. Improvements will cost \$15,000.

Wash., Seattle—Contract for erection of a three-story, \$125,000 factory-warehouse building for the Black Manufacturing Company, garment manufacturers, has been let to A. W. Quist Company, Hoge Building. The building will be occupied by the Crescent Manufacturing Company and the Electric Storage Battery Company.

Wash., Yakima—Construction of an addition to the present modern plant of the Yakima Meat Co. and Gibson Bros., Inc., at an estimated cost of \$125,000 and an immediate expansion increasing their stock have been decided upon. A contract for the building, to be of steel and concrete, has been let to Frank J. Leonard of Portland.

Wash., Yakima—A new modern plant is to be erected for the Yakima Dairymen's Assn. on Fourth Ave., instead of enlarging the present quarters. This is according to an announcement made following a recent stockholders' meeting. The cost of the new plant will be about \$25,000.

Wash., Tacoma—A new factory costing approximately \$30,000 will be constructed in Tacoma by the Progressive Sales Company for the manufacture of auto springs and shock absorbers. J. E. Drain, president of the company.

Wash., Spokane—Sawmill—A modern single band sawmill with a daily capacity of 60,000 ft., will be erected by the Sandpoint Lumber and Pole Co., at Troy, Mont., according to recent announcement by H. C. Culver, of this city, president of the concern. The company has purchased from the U. S. Forest Service about 3,000 acres of timber on Callahan Creek, Mont.

Dams

Calif., Oakland—A twenty-nine million dollar agreement ending all litigation and clearing the way for immediate work on the irrigation and storage facilities of the Madera district has been signed by representatives of the Miller and Lux estate. A large storage dam is to be constructed in Fresno county, in the vicinity of Friant. The boundaries of the new west side storage district will be determined immediately by two engineers, one appointed by the Madera irrigation district and one by Miller and Lux.

Calif., Sacramento—Requisitions for the material and service necessary for the building of a power dam at Camp Sacramento were approved by City Controller H. C. Bortorff. The hydroelectric plant is to be installed to furnish light and heat at the camp.

Calif., Anaheim—Prendergast Construction Company, 1321 Washington Bldg., Los Angeles, was awarded contract for constructing Pratt Dam No. 2 at canal intake, Santa Ana River, for Anaheim Union Water Company. Company will furnish materials. Dam will be L-shaped, one section 216 ft. long and the other 136 ft.; 6 x 6 in. wire mesh will be welded on 60-lb. steel rails 30 ft. long used for piles. There will also be lumber and rip-rap work.

Highways

Ariz., Yuma—R. Twohey, Phoenix, was awarded contract at \$161,374.75 for constructing 43 miles of state highway between Wellton and Maricopa county line. Work will start within three weeks.

Calif., Sacramento—The State Highway Commission has awarded a contract for 9.1 miles of concrete paving between Saugus and a point three-quarters of a mile northwest of Castaic School, Los Angeles county, to Sam Hunter of Santa Barbara, on his bid of \$58,012.50. The engineers' estimate for the job was \$47,600. A contract for 9.3 miles of highway to be graded and 7.6 miles to be surfaced with gravel, in Amador county between the western boundary and central house, was given to Blumenscranz and Vernon of Stockton, on their bid of \$102,377.80. The estimate was \$108,327.50. The George Pollock Company of Sacramento received the contract to grade 13.1 miles in Monterey county between Anderson Canyon and the San River. The bid was \$786,805.50, and the estimate \$623,430.50. Bonnell, Savage and Fenn of Tacoma, Wash., were awarded the contract for 10.9 miles of grading and paving in Colusa and Sutter counties, between Colusa and Long Bridge, on the bid of \$113,764.80, as against the engineers' estimate of \$136,090.30.

Calif., Yuba City—Galbraith & James were awarded a contract to construct approximately one mile of concrete road from Gray's Corners on the Bunce Lateral to Walton Ave. The bid was at the rate of \$19,850 per mile.

Cal., Sacramento—The State Highway Commission has awarded contracts for road work as follows: One 6.8 miles long, from Cottonwood Creek to the first crossing of Kern River, to be graded, to W. S. Mead of San Francisco, on his bid of \$281,157; the estimate of engineers of the commission was \$248,052. The other, providing for the paving with bituminous macadam of a stretch 2.7 miles long near Maricopa, was awarded to C. B. Christensen, also of San Francisco. Christensen's bid was \$31,446.80, as compared to the engineers' estimate of \$44,593.

Wash., Olympia—More than a million dollars' worth of highway construction work will be carried on by the state during the winter. Two contracts to be let October 3 will cost \$1,250,000, and include 20.1 miles of the Yakima Canyon Road, a new project, and 12.21 miles of the North Bank Highway. The former will cost about \$725,000, and the latter approximately \$530,000.

Wash., Olympia—Coluccio & Erickson, Seattle, on a bid of \$132,603.01, received the contract for paving 5 miles of the Sunset Highway, between Issaquah and Preston.

Wash., Olympia—Contract for paving 3.4 miles of the National Park Highway, between Elbe and Rainier Park Junction, Pierce county, was let to R. N. Bartlett, Jefferson, Ore., on his bid of \$86,101.23.

Wash., Olympia—Contract for grading and graveling of 7 miles of state road No. 4, from Tonasket east, in Okanogan county, has been

let to Anderson & Nelson of Tonasket on a bid of \$68,748.11.

Irrigation Projects

Calif., Merced—The contracts for the construction of the tunnel and syphon for the Merced irrigation district were awarded to P. L. Burr with a bid of \$24 per lineal ft. for the tunnel and \$24,700 for the syphon. The board rejected all the bids for the metal flumes and decided to do the work under its own supervision, it being estimated that this can be done for \$38,364.64. The lowest bid was \$42,150.

Calif., Eureka—Application for the diversion of 2,000 cu. ft. of water per minute from the Trinity River for agricultural irrigation purposes has been made to the state department of public works by W. H. Samson of Corning, Calif. The water would be diverted in Section 10 Township 34 N. R. 8 W. and would be used for irrigation purposes in the Sacramento valley south of Red Bluff. The estimated cost of the project is \$5,000,000.

Calif., Oroville—L. M. Edwards, superintendent of the Paradise irrigation district, has been instructed by the board of directors of the district to prepare plans and specifications for the installation of 13,000 ft. of 35-in. pipe to replace the present open ditch from the dam to the forebay. Bids will be opened at the next regular board meeting on October 3.

Calif., San Diego—A syndicate of San Francisco and Sacramento men has purchased 1,000 acres of farming land near Del Mar in the San Dieguito Valley. A corporation to be known as the Southern California Farm Products Company with a capital of \$500,000 will develop the land. A drainage system consisting of 10-in. concrete pipe every 300 ft. with canals, etc., will be installed at once. The system will extend from Del Mar to the Santa Fe ranch pumping plant. C. M. Jackson, president of California Insurance Company, is head of the syndicate.

Ore., Salem—First steps towards forming a new irrigation district were taken at a recent meeting in Molalla, when a committee was appointed to submit the necessary petitions to the county court. Information was given at the meeting by Professor Powers, soil expert of Oregon Agricultural College, and Percy Cupper, state engineer. Between 5,000 and 10,000 acres of land will be included in the district.

Ore., Bend—Lands of Jefferson county to the extent of 25,000 acres or more are soon to be irrigated by two large projects now under way. One of these, the Tumalo Irrigation District, a state-owned project, has secured rights in Crescent Lake and has successfully floated a bond issue for over \$500,000 for the purpose of completing the system. This will water 10,000 acres of land. The North Canal Company has also started construction work. The development will proceed in 5,000-acre units and includes a large colonization program, that will settle land as it is brought under water.

Wash., Spokane—The development of nearly 8,000 acres of agricultural land between Okanogan and Loomis, is now under contract between the State Department of Conservation and Development and the Whiteside Reclamation District. The department has agreed to purchase the necessary bonds which are about \$600,000.

Wash., Yakima—A contract for the construction of the irrigation laterals in the district east of the Northern Pacific tracks and north of Pacific Ave. has been awarded by the city commissioners to S. A. Campbell of Sunnyside, on a bid of \$72,095.85.

Wash., Kennewick—The big irrigation contract held by Howard S. Amon with the Horse Heaven Irrigation District for the irrigation of 250,000 acres of farm lands has been approved by the superior court. The court's action validates the bond issue of \$30,000,000 and dis-

poses of the last legal preliminary, leaving Mr. Amon to carry out the provisions of the contract. It is reported that a large financial syndicate has underwritten the bonds and that actual construction on the big project will start this fall.

Wash., Aberdeen—Three bids were received recently for dredging contract for the fourth drainage district in South Aberdeen, ranging in amounts from \$79,000 to \$83,000. The firms bidding were E. L. Cheatham & Son, Portland; Western Dredging Company, Mashfield, and the Parker-Schramm Company, Portland. Contract has not been let.

Wash., Wenatchee—A plan to develop 8,000 acres of land in Okanogan county has been completed by the state department of conservation, the department having agreed to purchase the necessary bonds, which will total nearly \$600,000.

Power Plant Equipment

Calif., Vallejo—Bids are being asked on a salt water circulating loop to be installed at the U. S. government power plant here, the estimated cost of which is \$100,000. The fuel oil system is to be changed at a cost of approximately \$36,000. The job orders call for installation of the power plant and supply department liquid fuel containers.

Calif., Los Angeles—Plans for four structures of a public or semi-public nature have been passed on by the Municipal Art Commission, according to the official report of that body. The most important of these was the plan for a two-story reinforced concrete substation to be built at San Pedro on property bounded by Harbor Boulevard, Front and Regan Streets. The building, designed by F. L. Roehrig, under the supervision of the power bureau, will cost about \$30,000.

Ore., Salem—A 2500-kw. steam turbine generating unit is being installed at the local plant of the Portland Railway Light and Power Company. This will supplement the water power plants on the Clackamas River by which Salem is fed through a 75,000-volt transmission line. The plan includes a system of conveyors for handling hog fuel with oil burners held in reserve for emergency work.

Power Projects

Calif., Monterey—The Del Monte Light & Power Company is reported to be contemplating the erection of a transmission line from Monterey to Castroville, via Del Monte, Seaside and Marina.

Calif., Ukiah—The Snow Mountain Water & Power Company, 216 Pine Street, has applied to the State Water Commission for permission to construct hydroelectric plants on the Middle Eel River, Thatcher and Elk Creeks. It is estimated that 12,000 hp. can be developed at a cost of about \$10,000,000.

Mont., Butte—The Montana Utilities Company, organized with a view to providing the smaller cities and towns of the state with public utilities, has started construction of a power line to Belfry, Mont., which will not alone supply that town with electricity but also the district between Bridger and Belfry.

Mont., Dillon—The Montana Power Co. will build a power line from Madison River to Dillon at a cost of \$50,000. The Union Electric Co. of Dillon has contracted with the Montana Power Co. for the purchase of the power to be delivered over this line.

Ore., Portland—George J. Burdick of this place has applied to the State Engineer for permission to divert 45.7 sec.-ft. of water from Rock Creek, a tributary of the Nehalem River, for developing hydroelectric power for lighting and general use. The development involves a timber crib and rock fill dam, 2,000 ft. of pipe, and a 400-hp. turbine operating under 77-ft.

head. The total cost of the development is estimated at \$52,500. R. W. Lincoln is engineer in charge.

Ore., Portland—The application of the Spirit Lake Railway and Power Company to develop water power at Spirit Lake at the foot of Mount St. Helens in the state of Washington has been denied, as announced by Colonel William Kelly, chief engineer for the water power commission from Washington, D. C., due to the fact that the lake is visited by thousands of excursionists during the year and the proposed development would stop this.

Ore., Mansfield—The Mountain States Power Company is completing an 18-mile extension to the town of Powers, where it will take on a load of approximately 300 hp.

Utah, Salt Lake City—Certificate of convenience and necessity has been issued to the Utah Power & Light Company by the public utilities commission of Utah, for the power company to extend its lighting and power system in Soldier Summit, Utah, in accordance with a franchise obtained from the town council.

Wash., Stevenson—A concrete power house for the Skamania Light & Power Co. is to be started in September by Contractor McKeighan of this place. The new plant will be located on Herman Creek above Cascade Locks. The company has recently increased its capital from \$20,000 to \$50,000. It furnishes light and power on both sides of the Columbia River and has lately extended its lines to Eagle Creek and other neighboring points.

Wash., Spokane—The Washington Water Power Company is erecting a brick addition to its 29th Street substation. Additional transformers are being placed and the feeders supplying the south side district are to be increased in capacity. The work should be finished in time to care for the heavy winter lighting loads.

Wash., Olympia—Two franchises for electric transmission and distribution lines, to be constructed along the rights-of-way of state highways, were granted by the state highway committee. The Lakeview Light & Power Company obtained a franchise along 1½ miles of the Pacific highway in the vicinity of Lakeview, Pierce county. The Pacific Power & Light Company was granted a franchise for a line along the Inland Empire highway between Pomroy and Pataha, a distance of 1½ miles. The committee set Nov. 3 as the date for hearing on the Washington Water Power Company's application for a franchise to construct electric lines along the Inland Empire highway from the north boundary of Spokane county northward.

Wash., Seattle—Seattle city council, in special session, recently passed a bill providing for issuance of \$2,000,000 municipal light and power plant and system bonds. The bonds are authorized to cover the cost of proposed extensions to the light and power system, including installation of 1,800 new street lights, placing in underground conduits all light and power wires in the business district of the city; a new substation on Spokane Street, with transmission line connection to the Cedar Falls plant; and for the site and construction of a light department warehouse.

Railways

Calif., Monrovia—Extension of the Monrovia-Glendora line from Glendora to San Dimas Junction, a distance of approximately five miles, is planned by the Pacific Electric Railway as soon as permission is granted by the railroad commission.

Calif., Marysville—Spencer D. Miller has been awarded contract for the construction of two roads, one approximately five miles of graveled road between Dobbins and Cottage Ravine on a bid of \$11,318, and the other a crushed rock

road between Ostrom station and Plumas school house on a bid of \$11,000. The Dobbins-Cottage Ravine road will connect up with the new roads to be built in connection with the rearrangement of the road system incidental to the erection of the immense dam in the Yuba River at Bullards Bar.

Colo., Denver—The Denver & Salt Lake Railroad Company is planning to rebuild its shops at Utah Junction, recently destroyed by fire, causing a loss of about \$700,000.

Ore., Albany—Plans for the construction of a railroad from Lebanon through Sweet Home and Foster to White City will develop a lumbering center at Foster which will exceed anything in the way of lumber development in Oregon. Plans were announced by Colonel A. A. White, railroad builder.

Utah, Salt Lake City—The Utah Central Railway Co. has applied to the Interstate Commerce Commission for authority to construct a new line, 31 miles long, between Huntington and Wellington, with a branch from Wellington to the Utah Railway Co. line, near Utah Railway Junction.

Street Lighting Systems

Calif., San Jose—This city is interested in installing a new street lighting system and the city manager has under consideration various kinds of street lighting plans.

Calif., Dinuba—Osborn Electric Co., Turlock, was awarded contract by city for constructing electroliner system on various streets. Other bids were: Valley Elec. Supply Co., Fresno, \$64,200; F. E. Newbery Co., San Francisco, \$66,173; Robinson Electric Co., Fresno, \$66,000; Globe Electric Works, San Francisco, \$71,000; H. C. Reid Company, San Francisco, \$65,169.

Wash., Seattle—Ne Page McKenney Company, on a bid of \$17,668, received the contract for cluster lights on University Way, on which six bidders submitted estimates.

Streets and Sewers

Calif., San Mateo—Bids for the construction of a sewer disposal system for the new county hospital were opened by the clerk of the board of supervisors and Barrett & Hilp, offering to do the work for \$12,000, were found to be the lowest.

Calif., Los Angeles—Now that the \$12,000,000 outfall sewer bond issue has been authorized by the voters of Los Angeles, work will be pushed on the emergency outfall and treatment plan. The pipe for the emergency outfall, which has been laid to the vicinity of Mesa Drive along the right-of-way of the Santa Monica Air line, will be extended beyond Culver City to a point west of the Baldwin Hills where the emergency treatment plant will be located. This plant will consist of Imhoff tanks and sprinkling filters and will cost about \$500,000.

Calif., Fullerton—The city of Fullerton has asked Santa Ana and Anaheim for permission to join in the project initiated by the latter two cities for a joint outfall sewer to the ocean. Unless there are legal obstacles which cannot be overcome, the request of Fullerton will probably be granted. City Engineer Ben F. Dupuy estimates that it will cost the city of Fullerton about \$200,000 to participate in the project. It would be necessary to increase the joint outfall from 36 to 42 in. and the line from Anaheim to the junction from 22 to 30 in.

Ore., Portland—The public works department has recommended the awarding of the construction of the Lents trunk sewer to the J. F. Shea Co., on their bid of \$693,110 for the route from East 92nd Street, in Lents, to East 21st St. and Harney Ave. and to the Willamette River by way of a tunnel under the Sellwood district. Specifications call for completion of the sewer 540 days after the contract is signed.

Utah, Ogden—F. W. Spencer Company of Salt Lake City have been awarded contract for the laying of 4½ miles of cast iron pipe in the extensive program of water main improvements.

Wash., Kelso—The United Contract Company of Portland has obtained the contract for the paving project in local improvement district No. 41, South Second and Third Streets, and connecting streets, for \$37,623. Bituhlitic paving will be laid, the bid for this type of paving being lower than for concrete. The same company submitted the lowest bid for concrete, \$38,657. The project includes laying of sanitary sewers and installation of a storm sewer system for South Kelso south of Alder Street, draining into the Coweeman River. The sewer system will be installed this fall.

Wash., Seattle—J. L. Smith, on a bid of \$43,785, received the contract to pave Lakedell Avenue, estimated to cost \$42,555.

Wash., Seattle—All bids for the paving of Terry Avenue, et al., on which J. L. Smith, Seattle, at \$110,857, was low, have been rejected. New bids will be asked for. Bids were also rejected for concrete walls on Atlantic Street, for which D. H. Traphagen, \$33,747, was low bidder.

Wash., Yakima—Contract for paving South Third Street has been let to the Yakima Paving Company, on a bid of \$60,550.58, for bituminous concrete on a concrete base.

Wash., Seattle—On a bid of \$116,626, R. G. Stevenson, Seattle, submitted the low bid for paving Alki Avenue, and received the award. Four other bids were submitted, the highest being \$124,235.

Wash., Seattle—On his bid of \$35,634, V. Ramaglia was low bidder for paving Taylor Avenue, and will probably be awarded the contract.

Wash., Seattle—All bids for paving of 11th Ave. N., et al., were rejected, and new bids will be asked. Coluccio & Erickson, Seattle, at \$28,627, were low.

Wash., Seattle—City Engineer J. D. Blackwell has been instructed to prepare plans for the grading and paving of Columbian Way, a projected arterial highway across Beacon Hill in the southern district, estimated to cost \$300,000.

Wash., Bellingham—On a bid of \$88,528, J. Lich & Sons, local, received the contract to pave West Holly Street. Contract provides that work must be completed by Feb. 1, 1923.

Wash., Seattle—The Olympic Construction Company, on a bid of \$112,278, received the contract for paving Olive Way, et al., estimated by the city engineer to cost \$111,965. The work involves 12,000 cu. yd. of earthwork, and 17,000 sq. yd. of concrete and asphalt paving.

Waterworks

Calif., Bakersfield—The proposal to organize a Bakersfield Municipal Water district carried at a recent election by a heavy majority. Upon completion of the organization, surveys will be made and financial estimates prepared in working out a plan of action for improving the water systems. Decision by a board of directors on the amount of funds needed to effect the desired improvements will be followed by another special election at which voters in the water district will be given opportunity to declare for or against issuing and sale of municipal bonds to create the district funds.

Colo., Longmont—Construction of a \$50,000 reservoir has been authorized by the city council to meet the growth of the city. The reservoir will be constructed on a hill west of the city under supervision of city officials.

Ore., Veronia—A \$30,000 water system for the new town of Veronia has been voted favorably by the council. A light and power franchise has been given to Geo. J. Burdick, who will begin construction on the hydroelectric plant very soon.

Journal of Electricity and Western Industry

25 Cents a Copy

October 15, 1922

San Francisco



Four and a Quarter Billion will be Spent in Ten Years

The West looks forward to unprecedented building activity during the next ten years. Conservative estimates place the expenditures for office buildings, mercantile structures, industrial plants and homes at \$4,230,000,000. This building activity will require the extensive use of wiring supplies, which, in itself, will constitute an enormous market.

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buildings

for mercantile
structures

Industries

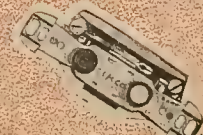
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The Connecticut quality line of wiring devices includes a wide variety of items to meet the building requirements of the West. Efficiently designed and strongly made, these devices can be specified with absolute assurance that they will do the work for which they are intended.

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The New Ambassador Apartments, a nine-story building in Portland, Ore., containing 49 five-room apartments of the most modern type. The Portland Railway Light & Power Co. installed in each home an 18-70 Crawford Electric Range.

An excellent example of Domestic Load

FRANKLIN T. GRIFFITH, president of the Portland Railway Light and Power Company, made the statement in late 1921 that "the outlook for the electrical industry in Portland and vicinity is encouraging. The use of electrical energy is steadily increasing. The most marked increase in consumption during the past year and in immediate prospect, has been and will be in further development of the use of energy in the homes of the people."

When he made that statement he had in mind just such use of energy in the home as the installation of 49

new Crawford Electric Ranges in this splendid new Portland apartment building. For that installation translated itself at once into a sharp upward trend and a steady new plateau in the domestic load curve.

This installation would not have been made with Crawford Electric Ranges unless experienced commercial men and electrical experts had been convinced, by severe test and tangible demonstration that "The Crawford Made Electric Cooking Perfect."

The Crawford Electric Range will supply a tonic to your domestic load curve.

The Crawford Plan gives every central station executive a chance to combine his energy with our own to further the use of electricity in the homes of the people. It's a plan to sell the best range in the best way. Have you seen it?

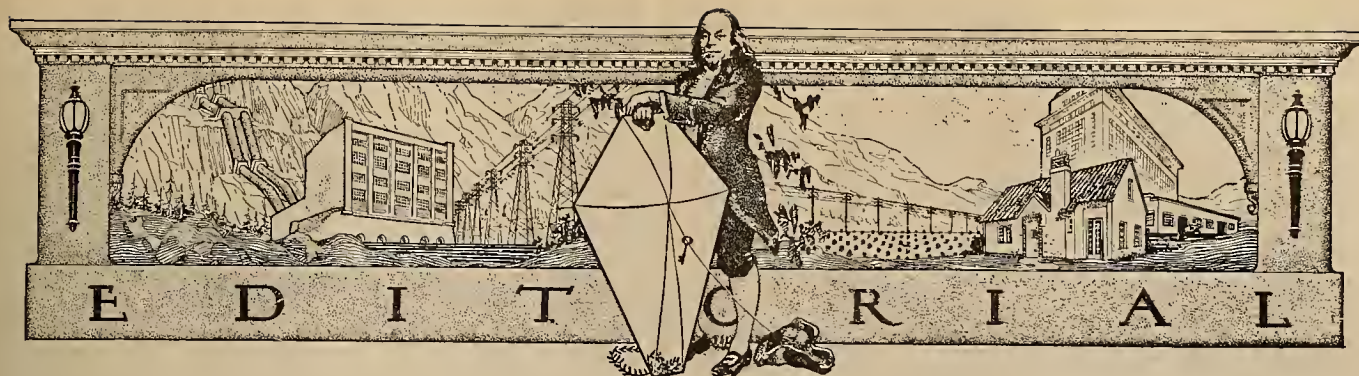
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The Everlastin' Teamwork

THERE are two essential elements that constitute good electrical service. One embraces the physical characteristics embodied in the delivery of electrical power and the other is an intangible something that adds immeasurably to the satisfaction of the consumer. That the physical element may be properly administered, the utility rendering the service must keep abreast of the times in engineering design and installation. It must render the service at reasonable rates and the consumer must always feel that proper safeguards have been legally established by which he is assured of fair play.

OUR readers are fully aware not only that hydroelectric development of the West leads the world in engineering achievement but that California and other western states deliver power to consumers today at prices below those prevailing elsewhere in the nation and with it all, the protection to the consumer afforded by such regulatory bodies as the California Railroad Commission has established national standards of efficiency too well known for us to dwell at this time on this phase of service.

BUT of the intangible element of service, little has been said. The attention of the utility world was first called to the high character of intangible service in the West by the Journal of Electricity and Western Industry through the publication of a series of articles by S. M. Kennedy of the Southern California Edison Company which have later appeared in book form entitled "Winning the Public." The fulfillment of the highest ideals of this intangible service requires men of wide vision, initiative and imbued with the cooperative idea. Some years ago the California Citrus Growers' Association startled the entire business world by the constructive manner in which they built up

their markets in the East through cooperative effort—markets that have returned to the West in twelve years the huge sum of two hundred million dollars with a loss of only ten thousand dollars incurred in bad debt collections.

NOW comes the electrical industry, thirty-five thousand strong, working as one man to consummate a great ideal. And how wonderfully that ideal has been achieved through the service rendered by western utilities can only be realized by personal contact with the communities of the West where this service is administered. This issue of the Journal of Electricity and Western Industry is designed to present specific instances of what this intangible service is doing for the upbuilding of the West. From the cheerful manner in which the western utility telephone operator courteously answers the phone, "Good morning, Mr. Jones, this is the Sacramento-California Power Company," to the speed and efficiency with which the motorcycle trouble-shooter hastens to the home to replace a fuse, this intangible element of service stands out in the West as a distinct contribution to the economic welfare of this region.

IT is done through the cooperative effort of well designed machinery and skilful installation. It is accomplished through well trained linemen, office workers and operatives off in the high fastnesses of the Sierras, Cascades or Rockies. It is the synchronous working of the master mind of the executive passed on down the line through the thirty-five thousand workers in every branch and phase of human activity included in the great electrical industry of the West. Indeed, as Kipling said,

"IT'S THE EVERLASTIN' TEAMWORK
OF EVERY BLOOMIN' SOUL."

Everything to Lose and Nothing to Gain!

THE bankruptcy courts would soon have to pass on the affairs of a merchant who, being already plentifully supplied with showcases and other fixtures, invested his entire capital in more showcases and fixtures and left himself nothing with which to buy merchandise.

The state of California, already plentifully supplied with cheap electric power, would seriously impair its credits if it issued \$500,000,000 of bonds to go into the power business and left itself nothing with which to finance the construction of highways, schools and public buildings and the provision of other facilities that a state is bound to furnish its citizens.

The so-called Water and Power "Act," the constitutional amendment which will be voted on in November, proposes to have California do just this.

California today has cheaper and more plentiful power than any other part of the world. This is the result of hydroelectric development by private enterprise under state control.

Private capital is willing to continue the development of hydroelectric resources to keep pace with the needs of the industry and agriculture of the state. Private capital is not willing to build schools and highways and public buildings for California.

There is no need for California to go into the power business. There IS a growing need for the state to build many kinds of public works necessary for the convenience and the progress of the people.

The issuance of \$500,000,000 of bonds would stretch California's credit to the breaking point. Even if the Water and Power "Act" accomplished everything that its advocates claimed for it, California would be no better off than it is at present, with the private producers of electrical power operating under the control of the State Railroad Commission. The people of the state have everything to lose and nothing to gain in the proposed experiment.

Tax the Highway Sign as Well as Exclude It From Right-of-Way

ON the ground that advertising signs along highways are conducive to accidents, an Oregon highway engineer has recently ordered the removal of all such signs that trespass on the highways. This is one more addition to the long list of protests against a public highway nuisance. In many states there is a statewide policy against allowing such signs on highway right-of-way and it is to be regretted that so far Massachusetts is the only state that has been able to prevent the erection of such signs on private property along the highways. The glaring sign board close to the highway, challenging every motorist who passes, is an imposition on the traveling public, and an offense to every lover of nature.

Because the owner of private property has been paid for the privilege, a bill posting company assumes the right to reap a benefit—and that in an

objectionable way—from the public highway toward which it pays nothing. The advertising value of the sign depends on the highway owned by the public, and not on the private property whereon it stands. Therefore the first obligation of the bill posting company is to the public. Permission from the land owner is a secondary consideration—another matter altogether. As now tolerated, the bill board is a parasite on the taxpayer who pays for the highways. He is, generally speaking, offended by the nuisance as much as any one else and the great wonder is that he has so long endured the imposition. It is argued that in recent years higher standards have been adopted in bill board advertising. This is probably because those who profit therefrom have seen the handwriting on the wall.

It is significant that a national bill board posters' association retains legal talent on an annual basis which has much to do in combating ordinances and legislation adverse to their interests. Regardless of improvement in standards, the signs continue to be an accident menace, they mar the landscape and they commercialize, as far as they can but without any recompense, the time that the motorist desires to spend in enjoying the outdoors.

These are some of the reasons against signs along highways. The only reason for their presence there is that profit may accrue to certain individuals and companies. The American public is becoming less tolerant of this nuisance. Highway engineers have done well to exclude advertising signs from the right-of-way. It is now time to go one step farther and urge that each state legislature pass a law taxing the highway advertising sign that has so long enjoyed a privilege for which it has not paid.

Power Company Construction Program Anticipates Future Growth

APPROXIMATELY \$75,000, or the equivalent of the wages of 15,000 men receiving \$5 a day, is being expended daily by the Southern California Edison Company in its hydroelectric developments in the vicinity of Huntington and Florence Lakes in the Sierra Nevada Mountains, California. From this expenditure, which will continue at approximately the same rate for the next ten years, hydroelectric power plants will be developed, the total generating capacity of which will be over 1,260,000 hp. in 1935, although this great amount of power will be but 200,000 hp. in excess of the estimated connected load at that time.

The case of this company is not exceptional. In fact the universality of this far-seeing judgment of the power companies has made such expenditures items which are of little news value. Practically every company operating in the eleven western states is making similar plans for the future that an adequate supply of power may be at hand to meet the inevitable demand. At present there is a normal surplus of 200,000 hp. in the territory served by the Pacific Gas & Electric Company, but this company is developing still more electrical energy,

based upon the company's estimates that in 1930 ten billion kw-hr. will be used in California, or nearly three times as much as was generated in 1920.

The development of the West is certain to come and as a forerunner of great industrial growth goes the well-managed power company securing means for supplying power for the industrial plants that are sure to follow. Motive power is essential to the industrial success of the West and hydroelectric developments are going to furnish this power. Western power companies are now furnishing good and adequate service to their customers and they will continue to do so under utility commission regulation.

In what other industry is there such a thought to the future—what other class of directors are so concerned with the welfare of future generations as to plan and make developments ten years in advance of a demand for them?

Three Outstanding Problems in Long Distance Transmission

NOT only is the question of ever increasing voltage of our main transmission lines necessary to enable us to carry more power over the present installations one of great timely importance, but the problem of protection of this service and the maintenance of continuity are also factors of great importance. Hence, there is need at the present time for a device or system of devices that will even more thoroughly protect our power systems by means of relays so that a dangerous short circuit on one section will be instantly localized. And in connection with this, for economy's sake, all of our small hydraulic plants should be semi-automatic. That is, they should have no attendant except the watchman. As a factor in the betterment of continuity of service comes also the problem of developing cheaper auxiliary steam power in the West. Due to the increasing price of oil, we must increase our efficiency of the oil that we burn. Hence, it may well be said that three great outstanding problems of the day in interconnected service are, increasing the voltage of main transmission lines, the installation of relays for the isolation of break-downs in main lines with the companion problem of placing semi-automatic control in all hydraulic plants, and the development of cheaper auxiliary steam power.

A New Economic Triumph in Development of High Voltage Transmission

WE have recently witnessed the opening up of a transmission system in California designed for 220,000-volt transmission. These words alone mean little but their significance lies just here, that at 220,000 volts four times as much power can be transmitted as at 110,000 volts. Ten years ago, even five years ago, the Pit River power could not have been brought into the great agricultural and commercial centers of California at a cost that would enable the people to use it. As far back as thirty years ago

the picture of the possibilities of the Pit was seen and the water rights were located and many efforts made to develop the power on this unusual river, but all of them came to naught simply because the power could not be carried down to the load centers at a cost which would make it economical to use the power. As great as was the 110,000-volt triumph in the past, if reliance were made upon this voltage for transmission of power from the Pit River development it would be necessary to have eight express lines of two circuits each, or sixteen circuits compared with the four circuits now designed to bring this power down to the load centers of California. In other words, the sum total of the result of going to this new high voltage is to reduce the cost of transmission exactly by half. Here then is an economic attainment of which the electrical industry may be justly proud.

Solidarity in National Engineering Society Development

ENGINEERS living in the eleven western states who are members of the national engineering societies, located as they are many hundreds of miles distant from New York headquarters of these societies, have to the man experienced great difficulty in keeping the proper tie-in with the parent organizations. This is due primarily to two causes: first, since engineering problems in these more remote districts are as a rule so entirely different from those prevailing in the more congested eastern centers, western men do not always find an outlet of expression in the national societies; second, the distance from headquarters is so great as to make it impossible both in the expenditure of time and money for members of the various local sections of the parent societies living in the far western states to maintain close contact by personal visitation with the national headquarters.

One of the great national engineering societies has consistently followed a wise custom over a period of years by paying annually the complete expenses of a delegate to the national convention from each duly established section, no matter how far that section may be situated from the national headquarters. This policy is one that could well be adopted by all of the national societies. The net result of this annual meeting of local section delegates at the New York headquarters is that today this national organization occupies a premier position among the great founder engineering societies in so far as its national solidarity is concerned. After discussion regarding the advisability of continuing this custom it was decided by this particular engineering society to continue the practice of sending sectional delegates to the national convention. This action is a wise one and will result in much benefit to the society. Far better would it be to cut down practically any other expense to be allowed in the budget than this most vital one concerning the sections of the society and the maintenance of contact throughout the length and breadth of the nation.

CURRENT COMMENT



Great Britain promises to far outdistance this country in the matter of radio broadcasting as the result of a new step which has been taken jointly by the

Government to Control British Broadcasting

government authorities and the manufacturers, in order to avoid what the London Times calls "The endless confusion which has resulted in the United States

where broadcasting has been allowed to grow haphazard." Broadly, the British scheme is to have all broadcasting done by a single organization which will be sanctioned by the government, operated by the manufacturers of receiving sets and financed jointly by both.

The six principal manufacturers of radio equipment in Great Britain have jointly formed a broadcasting company, stock ownership in which is available to themselves and to any other manufacturer of radio receiving equipment in the British Isles. Six broadcasting stations are to be established.

The question which is beginning to draw more and more attention in this country as to who shall pay the very considerable expenses of operating broadcasting stations and arranging satisfactory programs, has been solved in Great Britain in an ingenious way. Over there amateur receiving sets are licensed by the Post Office Department, paying a fee of 10 shillings, equivalent to approximately \$2.20. This department has agreed to pay half of this sum to the broadcasting company. In addition to this share of the government's license fee the company will receive a sum based on the annual sales of each of the manufacturers who are members. Any profits which remain after the expenses of the various broadcasting stations are paid will be returned to the shareholders in the form of dividends.

In order to protect the radio manufacturers from competition, the government has agreed not to license any receiving stations which are equipped with other than apparatus made by members of the broadcasting company. The Post Office Department has also reserved the right to inspect all apparatus before giving its approval to a station. Home-made sets can be constructed and operated under this arrangement provided the 10 shilling government fee is paid.

It would seem that the British are determined to place broadcasting on the highest possible plane. American manufacturers are admitting that something is radically wrong with the present broadcast-

ing scheme in this country. In many localities there have been rumors to the effect that central broadcasting stations were to be established, but as yet there has been no definite action. The fact remains, however, that something must be done to improve the programs which are being sent out in most localities.

Construction of a three-phase 20,000-volt transmission line connecting the system of the Mountain States Power Company at Myrtle Point, Ore., with

Transmission Line Erected in Record Time

the town of Powers, a distance of nineteen miles, in the record-breaking time of 33 actual working hours, is the feat recently accomplished by a construction crew of that company. The pole line parallels the right-of-way of a logging railroad and an electric crane was used to set the poles. The entire line consisting of 334 poles was set in 22½ hours. The wire was strung and laid upon the crossarms in 10½ hours. The accomplishment of this feat is another example of the service which the western power companies are ready to furnish at all times.

The progress which has been made by the Federal Power Commission since its organization two and a quarter years ago is set forth by O. C. Merrill,

Work of Federal Power Body Is Reviewed

executive secretary of that organization, in a paper read before the recent convention of the American Society of Civil Engineers in San Francisco. Mr. Merrill declared that the provisions of the Federal Water Power Act are adequate to protect every legitimate public interest. In recounting the work which has been accomplished, he said:

"That the Act also affords conditions under which capital may be secured for development purposes is evidenced by the results accomplished in the two and a quarter years in which the Act has been in effect. In this time there have been filed with the commission 348 applications for permits or licenses, involving an aggregate estimated installation in excess of 20 million hp. This amount is more than twice the existing water power installation of the United States. It exceeds the combined potential water power resources of Norway, Sweden, Finland and the Arctic and Baltic drainages of Russia—the chief water power region of Europe. It is nearly twice the combined resources of France and Italy.

It is more than six times the aggregate of all applications for power sites under federal control in the preceding 20 years. Up to Oct. 1, 1922, the commission had authorized 64 preliminary permits and 64 licenses, of which 25 were for transmission lines. The 60 permits now outstanding involve an estimated installation of 2,540,000 hp., and the 39 licenses for power projects, 2,040,000 hp., or a total of 4,580,000 hp. Of the projects covered by the 39 licenses, fifteen, involving an estimated installation when completed of 1,880,000 hp. and investments of not less than \$250,000,000, are either completed or under construction. This is one and a half times as much as was constructed under federal authorization in the 20 years preceding the passage of the Federal Water Power Act. As a practical result of the present law there is probably more water power development now under construction than at any previous period in our history.

"By confining its activities primarily to applications for power projects, declarations of intention and requests for restoration to entry, the commission has been able to take final action on more than half of the applications for permits and licenses, or a total of 197. Of the remaining 151, 20 are not sufficiently complete for action to be taken, and action on 27 others must await prior action of other agencies. The commission has also rendered decisions upon 36 declarations of intention, passed upon restorations to entry in 200 cases and made withdrawals of 1,250,000 acres of public lands in connection with applications for power projects.

"While the two years' record is reasonably satisfactory, in view of the serious handicap under which the commission is working, the commission should, nevertheless, promptly be placed in a position where it would be possible for it fully to carry out the purposes plainly expressed in the law. The present situation necessarily results in an administration of the law which is insufficiently co-ordinated and only partially effective. The chief purpose of the creation of the commission was to secure a common policy and a single executive agency in water power administration. This purpose has not been accomplished. Other agencies are still continuing their independent activities and these activities are not controlled by a common plan and are not subject to a common direction. This defect will not be cured and the commission will not be able to perform in full the duties placed upon it until the Act is so amended that it may employ its own personnel. It is important that this action be taken at an early date. Having waited ten long years for a legislative pronouncement of a government policy respecting the utilization of our huge water power resources, we should not be required to wait another long period of years before means are provided for the execution of that policy.

"There is one other matter to which attention should be directed. There are movements on foot in several quarters to secure for certain sites or streams special legislation, which if approved would constitute a partial repeal of the Federal Water

Power Act, and would eventually result in the progressive disintegration of our present national water power policy. If these proposals that rights or authorities be granted independently of the present law be examined, it will be found that some or all of the essential features of the Act, particularly those that protect the public interest, have been omitted, even when provisions in direct conflict have not been substituted. Furthermore, the granting of special privileges to favored interests would clearly discriminate against those who, in the faith that Congress has at last fixed its policy, are investing hundreds of millions of dollars under the obligations of the Act."

As the result of further study of other and older electrical leagues, the Advisory Board of the Electrical Cooperative League in Denver has revised its plans and activities for the balance of the present fiscal year. In the hope of more clearly defining its purpose and in making its position felt in the community, the board decided to concentrate on a revamped plan of activities, most of them related to the original outline but more specific as to nature in extending the electrical market in Colorado.

This action was taken at the time when Lawrence W. Davis of the National Association of Electrical Contractors and Dealers and K. A. McIntyre of the Society for Electrical Development visited in Denver recently, and it is said that the observations and opinions reflected by both of these experts had considerable to do in establishing the broader policies.

According to a report from Denver, the fundamental purpose of the league as a service organization has been recognized. To support and strengthen this position, the league intends to bring to the public better illumination and a more complete utilization of the benefits accruing from the use of electrical servants and conveniences in home and business life.

In the accomplishment of this purpose, effort will be concentrated along the following lines:

1. The enlargement of the league staff by the addition of a field man to work directly with architects, builders, owners and others in advising on complete electrical installations in all types of buildings.
2. To work toward the continual improvement and enforcement of electric wiring rules.
3. The establishment of a permanent lighting exhibit with accompanying lectures.
4. The encouragement and co-ordination of electrical exhibitions at various expositions.
5. The establishment of more electrical homes in the most advantageous places.
6. Serving the public as a bureau of electrical information.
7. The development of team work throughout the industry by get-together meetings and other social activities.
8. The extension of membership in the league to other interests participating in the benefits of its work.
9. The education of the purchaser of electrical service and merchandise to the value of the league emblem to them, viz.: to indicate that anyone entitled to its use is reliable and responsible, and that it represents the highest class of service, workmanship and materials.
10. The extension of the work of the league to such other territory outside of Denver as can be served profitably to the industry.



WHEN you press the button and the electric current silently and swiftly responds to do your bidding, it means that somewhere in the mountains men have builded dams and tunneled in the earth through solid granite to make paths for the water which shall be transformed into energy to meet your need. It means that hundreds of miles of wire have been strung across mountains and valleys, substations built, distribution systems planned and that even now for every minute of the day men are guarding every detail of this great network, keeping eternal vigilance through sun and storm and flood, that somewhere in your factory or home, you may have uninterrupted service.

Thirty-five Thousand Public Servants



JAMES H. WISE

Assistant general manager of the Pacific Gas & Electric Company, who lost his life in the performance of his duties on Sept. 16, 1912.

"While in the full flush of youth he passed away—his ambitions unrealized in their fullness, but leaving for those who were associated with him a memory which will endure. He builded better than he knew, for up in the high Sierras there stands a monument to his genius, as everlasting as the granite rocks—He died in the performance of duty—Let there be inscribed to his memory, that he was a loyal friend, faithful to his task."

—A tribute by John A. Britton, Dean of the Electrical Industry in the West.

How Thirty-five Thousand Employees of the Power Companies and of the Merchandising Branches of the Electrical Industry in the West Have Developed the Idea of Helpful Cooperation in Community Service

By Robert Sibley

S FAR back as 1892—thirty years ago—it was my privilege to observe intimately the enthusiasm, vigor and love for the work of service which has prevailed to such a marked extent among the workers in the electrical industry in the West. From the old San Antonio plant in Southern California (the first long distance hydroelectric plant in America transmitting power at a voltage higher than generated) down to such record achievements as the Caribou development of the Great Western Power

the highest economic value. They have kept in great measure clean and clear-cut in their private lives, serving as examples of good citizenship in the communities where they dwell. They have early learned that man is a social being and hence they have endeavored not to rust out socially. They have encouraged the young man in his endeavor to attain to higher planes of mental ability. They have cultivated the ability to get on with men. They have learned the good results to be derived from the application of thoroughness in work. They have learned to obey. They have developed to a marked degree the power to originate new ideas and inventions.

And finally, above all other traits, they have evolved a sense of loyalty to their industry and to their fellow workers which stands out above that of any other single industry or grouping of men to be found in the cross-section of present day effort. This loyalty to an ideal of service has at times cost them their lives—at other times they have been spared to carry on their simple rounds of daily service.

It is not the purpose of the following lines to tell "How did he die?" but rather "How did he live?" Hence, in the few instances we have chosen to illustrate the measure of service which is being rendered by these thirty-five thousand workers of the electrical industry throughout the West, we shall endeavor to give the reader some idea of the intricacies and difficulties encountered in this daily service. And if we prove true picture painters in these few instances following of "what is behind the switch," the reader will bear in mind that this list should be extended to include thirty-five thousand heroes in all.

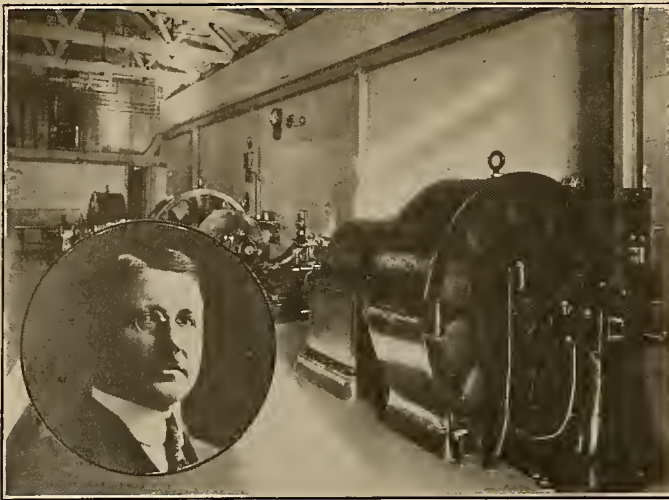


J. M. Howells, consulting engineer with the Great Western Power Company and originator of the Feather River power development, and Tom Goon, construction camp cook and well known character in western power circles where he has fed, bossed and loyally served a generation of power company men. There are thirty-five thousand like these two and in the wide range of electrical activities between them—all of them working in their respective departments to make actual that swift and dependable service which is represented by the electrical switch in the factory or in the home.

Company and the Pit of the Pacific Gas & Electric Company or the Big Creek of the Southern California Edison Company, the record of loyal work, building toward an ideal of service to the public, has been of the same high order.

H. G. Wells, in his "Outline of History," places human cooperation and the spirit of social helpfulness as the essence of man's progress and the goal of his somewhat bungling gropings. The praise may be thought perhaps a bit fulsome, but it is nevertheless a sincere statement on the part of the writer, that so far as his observations have extended, there is no industry or no group of workers who so exemplify this ideal of community willingness as the electrical industry in the West.

The electrical workers of this country west of the Rockies have learned the value of the community of interest. They have sensed the importance of being in the true sense citizens of their world and from the remote centers to the great metropolitan areas they will be found in the forefront of civic affairs. They have dared greatly in finding out and following new paths, without fear of precedent, alike in the handling of physical forces and of men. They have searched out new scientific truths for practical application in bettering the affairs of men; they have studied men and conditions to make these truths of



For his ability to develop equipment to control the erratic action of streams in southern California, where every drop of water must be utilized, Gustaf Clingwald is the hero of the operating department. His automatic water control devices, when used in conjunction with electrical protective equipment in the smaller hydroelectric plants, have resulted in a marked decrease in the cost of operation of these Southern California Edison plants. The picture shown is that of a twenty-nine year old pioneer three-phase hydroelectric station which now operates semi-automatically. It is at present generating energy at a lower cost than at any period in the twenty-nine years of its existence.



Milton Kempt, in charge of crews on one section of the Florence tunnel of the Southern California Edison Company, typifies the construction worker who is back of electric service. He made a record for tunnel driving on the Big Creek tunnel. It was necessary to bring this tunnel in on time and during the last forty-eight hours, Mr. Kempt slept only two hours. Manifesting a human endurance that was almost beyond comprehension, he led his men on till the drills jammed through the headings, the muckers cleared the passage and the water flowed through, conserving thousands of dollars' worth of oil and making possible enormous increases of hydroelectric generation.



H. N. Nygaard and Chas. Rada of the Pacific Gas & Electric Company, with their service truck. Through three years of experience in the field, these men have worked out most effective methods of boxing and caring for tools, so that both time and money is saved and replacements are reduced to a minimum.



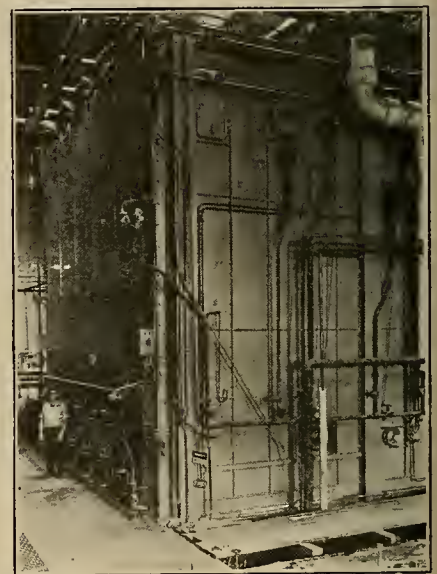
Grant Howard and crew of the San Joaquin Light and Power Corporation, carrying out one of the many operations which go to make up the service back of the service. Following the opening of the Kerckhoff plant, the San Joaquin company made a record by connecting up 5,500 rural customers who were waiting for power within 90 days' time.



James Akin of the Portland Railway Light & Power Company, who has the reputation of having made more taps on live high voltage lines than any man in the company. On one occasion he ran a line of lighting secondaries at night single-handed to a house in the suburbs where a woman lay on a sick bed in a dying condition and made a tap on the hot 2,300-volt primary while drenched to the skin in order to provide light for that sick bed.



Battling the Sierra snows to keep the lights burning—a crew of Pacific Gas & Electric Company men who worked waist deep in snow and water from sunrise until an hour after dark to keep the Drum Canal open during a snow storm. W. J. Crabbe is superintendent of the division, Jack Eddy foreman of canals, and Tom Jesserson ditch foreman. Others on the crew are Miller Jesserson, P. T. Worthly, Tony Fontz and Mike Fontz.



In the steam station as well as in the development of water power, the man always on the job in the plant is the one who best typifies the personal element back of continuous service. The boilers are those of the San Diego Consolidated Gas & Electric Company, the largest west of the Rockies, and the man is A. C. Stuckrath, fireman. Steam auxiliary service plays an important part in supplementing hydroelectric service.



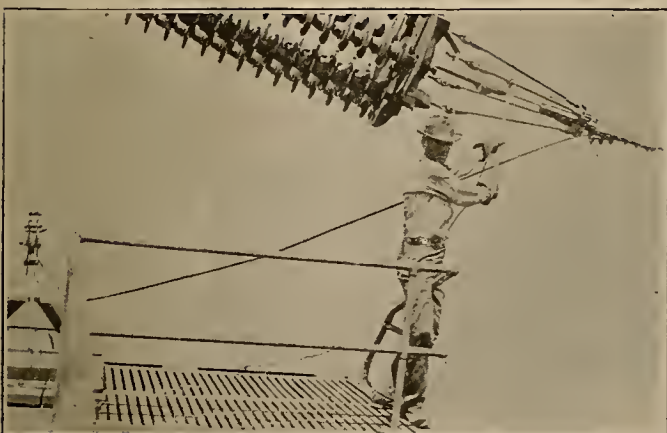
George Yost of the Southern Sierras Power Company, conducting a pack train across the pass below Mt. Lyle to bring cement for the building of the Rush Meadow Dam. Each pack animal carried three packs, or 300 lb. of cement, over a trail which reached an elevation of 11,000 ft. This is typical of physical difficulties overcome in carrying out some of the hydroelectric construction work in the mountains and isolated parts of the West.



Nick Arff of the meter department of the Portland Railway Light and Power Company, tagging a meter on a recently vacated house. For the convenience of the new tenants, the company arranges to leave power on for five days' time and leaves a note to this effect on the meter, thus giving the householder time to get settled without the inconvenience of having an interval of no power. It is these small courtesies which mean most in power company service.



In extreme emergencies, an electric range may be delivered on foot. B. M. Pharris of the Line Department of the Portland Railway Light and Power Company who is carrying the range, weighs two hundred and sixty pounds and is six feet, six inches in height, while his helper, Oliver Howie, weighs one hundred and thirty and is five feet tall. Western power companies have repeatedly demonstrated their ability to meet emergencies.



C. E. Hall of the Great Western Power Company exemplifies the heroism and loyalty in the line of service of which so much is found in the rank and file of the power company employees. In September, 1920, he rescued a fellow worker who was shocked while testing insulators on a 100,000-volt line. Hall had to wade through a considerable pool of water to reach the tower on which the victim had been working. Realizing the necessity for prompt action, he and another lineman administered the Schaefer-Prone resuscitation treatment while on the tower under the most difficult and dangerous conditions, restoring respiration in about fifteen minutes. The man has since recovered. Photograph by M. A. Ayers.



Day and night the service department of the power company stands ready to answer trouble calls and to keep the lines in perfect working order. It is in a way the visible agency through which the service of the power company touches the public. The battery of telephones used in this service is composed of two exchange lines, one main line for the private use of the service men calling for orders, one main line to the police station and two local private lines, also used for dispatching inter-department business. J. P. Fenerstein, the dispatcher, is one of three men who handle the service work during each twenty-four hour period and who at all times keep their heads, even when an unreasonable customer calls up.

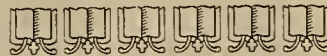


These service cars of the Portland Railway Light and Power Company furnish continuous service day and night to the trouble complaints of the 60,000 customers and are operated on two shifts, of eight hours each, each day. The cars average eighty miles daily over a territory of one hundred square miles. The service men from left to right are: W. G. Zurbuchen, A. L. Ellis, J. Drennan, R. C. Blackmar, H. A. Sargent, H. G. Wilson, M. S. Potter, E. E. Landis, E. L. Faust, F. O'Donnell, R. H. Johnson, R. B. McClurg.



Standing on the pole to the right is George M. Stidham of the California Oregon Power Company, who risked his life in attempting to rescue a companion who was electrocuted while working on a high tension pole. Failing to remove the body from below by pulling on the clothing he cut the wires, thus clearing the circuit, and worked incessantly with the usual resuscitation methods until relieved by doctors and outside help.

Winter conditions in the mountains must be met. Fighting through the snow to make repairs on service lines after a heavy storm—California Oregon Power Company at Dunsmuir, California. (Left.)



On the snow in the center picture patrolling the Western Colorado Power Company's 17,000-volt line near the top of the range. The picture shows the severe conditions under which service is maintained. Snow at this point is twenty feet deep.

The pole in the picture at the right-center of this page is 35 feet high and the snow almost as deep. C. G. Brudlove and helper of the Idaho Power Company are making sure that the lines are in good condition and that there will be no interruption to service.



In every part of the West, the men of the electrical industry, from power company, manufacturer, distribution house and retailer, are banded together in statewide leagues whose watchword is "Better Service." The view is that of a "Get-together dinner" of the California Electrical Cooperative Campaign at the Palace Hotel. The ultimate expression of the service of electricity is in its use in the home and the factory, as shown in the insert.

Recognizing that one of their functions of service is to place the expert knowledge of the electrical industry at the disposal of the housewife, the local electrical clubs in all parts of the West have fostered "Electrical Homes" and exhibits. E. O. Shreve, president of the San Francisco Electrical Development League and R. M. Alvord, of the California Electrical Cooperative Campaign, are shown standing on the steps.



Headquarters of the mountain construction end of the program, upon which the Southern California Edison Company is spending two million dollars a month in building for the future—driving a tunnel through the mountains and laying the foundation work for power development which will meet the needs of the district which it serves in 1930. Not the least of the services which the power company renders is the pioneering work which it does in building beyond the wants of the present in anticipation of the increased demands of the next generation.

Do the Power Companies Give Adequate Service?

ON a conservative estimate, over fifteen billion dollars will be spent in the West within the next ten years. One and one-half billion of it will be spent in the construction of homes — homes which will be electrically lighted and electrically served, which will be built only because the districts, in which they will be located, will be made more livable and attractive by adequate transportation facilities (electrically operated), electric street lighting and the protection and convenience of the electric telephone. One billion of it will be spent in the erection of factories

—factories which will be electrically lighted throughout and which for the most part will be built entirely without chimneys because electric power will have taken the place of the steam engine and the boiler. One and one-half billion of it will be spent on the farm, most of it in the develop-

THE answer to the question of whether the western power companies have given adequate service in the past and whether they may reasonably be expected to in the future lies in that economic principle underlying the operation of business enterprise which offers the incentive of increased rewards for increased service. Like any other private enterprise, the power company faces the situation of profiting as it increases its business and increasing its business only as it is able to furnish a better and cheaper product.

This relationship between increased service and any extension of profits is the closer because, under commission regulation, there can be no increase in the margin between cost of production and rates to the consumer. The soap manufacturer may increase his gains in two ways, by increasing his market and by lowering his cost of production while he still charges the same for his product, but every improvement in the manufacture of electricity is passed on immediately to the consumer through lower rates fixed by the regulating commission, and rewards come only through the greater volume of business resulting.

There is nothing Utopian in the situation—all private enterprise is dependent in the last analysis upon the good will of the public. The spur to individual ambition which is provided by the lash of this necessity for rendering service in proportion to the reward which it is desired to reap is the fundamental justification for private operation. In a very selfish and businesslike world it is comforting thought for progress that it pays to be good.

ment of land made arable only through the use of electrically operated pumps. Without going further into the part which electricity has come to play in every function of western life, it is at once apparent that an adequate supply of electric power at reasonable rates must be available if this predicted progress of the West is to materialize as anticipated.

With electric service recognized as an essential in western development in the same sense as are transportation facilities or a supply of fresh water, the public has the right to inquire not only, if the elec-

tric service now offered is adequate, reliable and cheap, but also if it will be equally adequate and still more reliable and cheap to meet the increased demands of ten years from now. In other words, in this industry of furnishing "service," can the western power companies be expected to work in the

interests of the public, building ahead to meet needs as they are foreseen, searching for new and better ways which will be ultimately reflected in better and cheaper power? Have the power companies given adequate service in the past and may they reasonably be expected to do so in the future?

In spite of the fact that the millennium has not come in any field of business and that the power companies, along with every other human institution, may be charged with some defects of service, the answer should be unhesitatingly in the affirmative. In fact, it may fairly be said that in many respects the West enjoys the most advanced power service of any district in the world. This is an easy statement to make, but there is supporting evidence to justify it. The West uses more power per individual than any other section of the country and in spite of unusual difficulties of engineering involved in western power developments, it pays less for the electricity it uses than does any other district. Since the United States is advanced in ways electrical beyond the remainder of the world, this places the West in a most satisfying position.

Per Capita Consumption and Charges

The figures are as follows:

Kilowatt-hours Consumed Per Inhabitant

In the 11 Western States	895
In the remainder of the United States.....	372

In other words, electricity is three times as important in the life of the average westerner as it is to the citizen in any other section of the country.

Charge to Consumer Per Kw-hr. Generated

In the 11 Western States.....	1.57c.
In the New England States.....	2.82c.
In the Atlantic States	2.09c.
In the South Central States.....	2.65c.
In the North Central States.....	1.82c.
In the United States as a whole.....	2.17c.

These figures are based upon data furnished by the U. S. Geological Survey and convey a fair idea of the relationship in rates existing in the various sections. The West, in other words, enjoys a rate which is 14 per cent less than the next lowest rate, 57 per cent of the rates charged on the average in the New England states and 73 per cent of the average rates for the United States as a whole.

Decline in Cost of Electricity

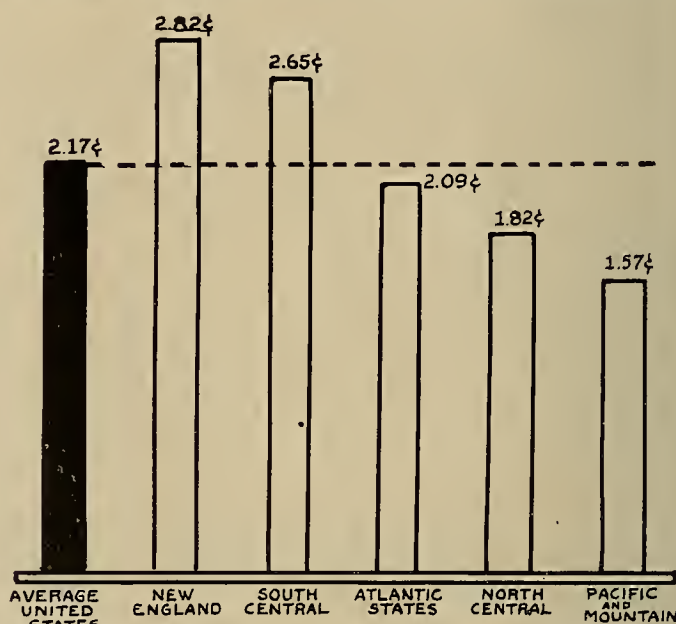
There are a few products whose cost has not materially increased in the past twenty years. Electricity is one of the few. The electrical industry from 1902 to the end of 1917 reduced the price of electric energy to one-half what it was in 1902. From 1917 to 1920 there were some very slight increases, followed by reductions within the past two years, and the average cost of electric energy on western power company lines in 1922 is less than one-half of what it was twenty years ago. The output of electricity is about four times more per employee on western power company systems than it was in 1900, both facts testifying to the progressive attitude of power company management and to the ability of power company engineers.

In attempting to answer the question as to whether electric service has been adequate to meet the needs of this district in the past, it is illuminating to look at the records of western growth. Any student of western development is familiar with the remarkable strides of this territory revealed by the returns of the U. S. Census. The following table is an indication of the fact that western growth has not in any way been retarded during the past twenty years:

Percentage Increase, 1920 Over 1900

	11 Western States	United States
Population	117	39
Assessed Value, all Property.....	378	167
Annual Bank Clearings.....	1,149	428
Value of Annual Farm Crops.....	274	204
Kw-hr. of Electricity Generated.....	2,177	2,097

One of the best tests of the economical methods of operation and satisfactory manufacturing conditions back of any product is the increased use of the product by the general public. The fact that matches have advanced from the stage of an expensive and curious luxury to the ordinary commonplace of every household, testifies to the healthy fact that scientific advances and improved conditions of manufacture

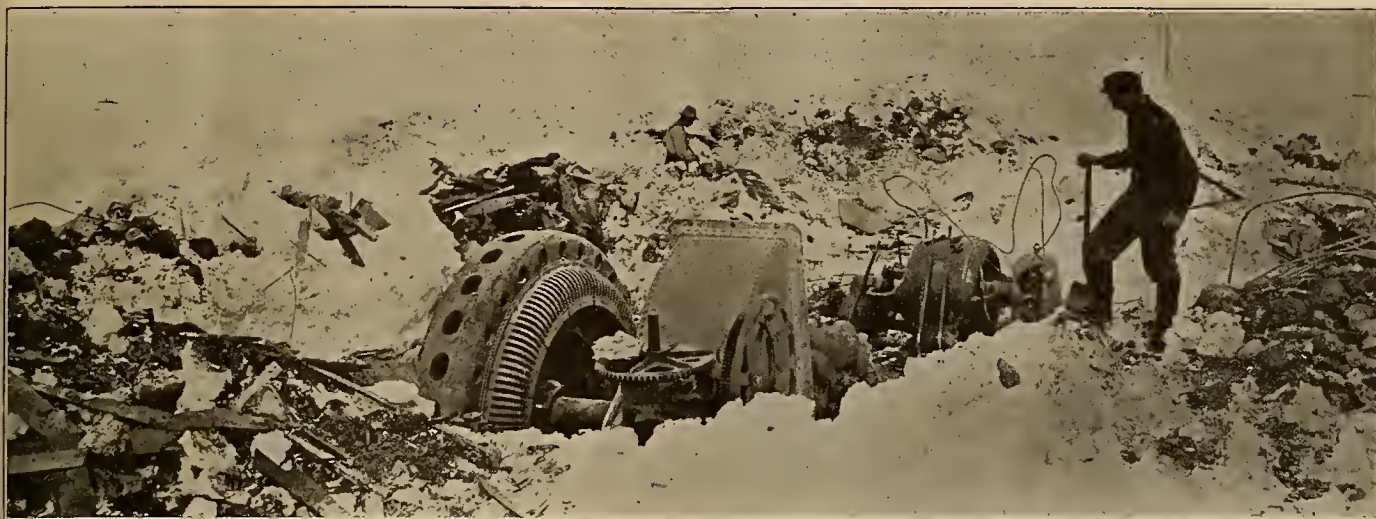


Comparative rates per kw-hr. generated, based on U. S. Geological Survey records for the first ten months of 1922. In spite of the difficulties in the generation of power which western power companies have had to meet, rates to western consumers are appreciably lower than those of any other section of the United States.

have been introduced in the match making industry. The same situation prevails in the case of electricity. In 1902, the average inhabitant of the 11 western states used 75 kw-hr. of electric power. By 1912 he was using 450 kw-hr. and by 1920 895 kw-hr. The latest statistics indicate the figure of 1,221 kw-hr. per capita for the 11 western states for 1922. The service is evidently reasonably satisfactory.

Supply of Power versus Demand

Have the power companies always had sufficient power to meet the demands made upon them? This question is generally asked with the year of the power shortage in mind, when certain of the Cali-



Scene at the Jordan hydroelectric plant of the Southern Sierras Power Company, after a disastrous snowslide of March, 1911, in which seven persons were killed by the tons of snow which buried the power house. The interruption to the service was noted at division headquarters and the superintendent of the plant started out in a blinding snow storm to cover the 14 miles that the service which had been crippled by the elements might be restored.

California power companies were forced to discriminate between their consumers, and the "power administrator" was appointed at the request of the companies to safeguard the interests of the essential industries of the state. It is important to understand the conditions under which this shortage of power occurred. All power companies plan their construction work at least ten years ahead, with the idea of having power available as it is needed. In 1917 the War Finance Board stopped all progress on construction plans. Money was required for more urgent purposes and the power companies, who had maintained a generous surplus of power over demands, could worry along and approach nearer the margin of their capacity without danger or inconvenience to the public. This was all very well, except, of course, that when the war ended, a sudden spurt of ship building and industrial development of the boom period made an unusual demand for power and brought this margin somewhat closer than was anticipated. Coupled with this rather abnormal situation came three dry years in California when the rainfall was far below normal and when some of the water power plants operated on stream flow were unable to live up to their full capacities. During one year there were hours at the time of peak loads when there was not a kilowatt to be spared on any of the interconnected systems of California and when the power companies had to refuse to take on new customers because they could not guarantee service during a rush period.

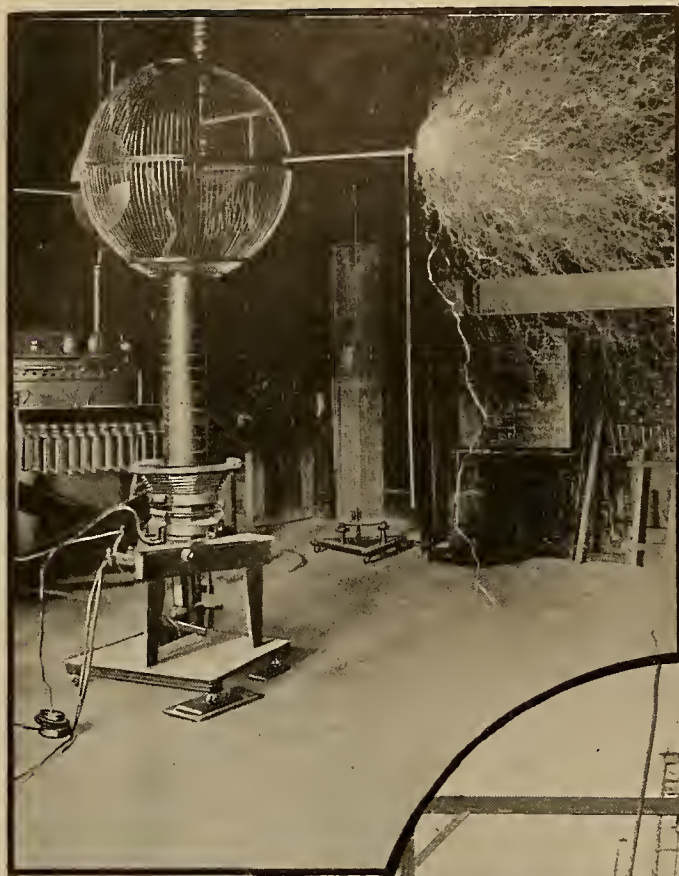
All this should be looked upon as a war time aftermath, however, and not in any way characteristic of general power conditions. The major effect of the interlude was to teach the farmers and the industrial men of California the importance of electricity and the need for financing the power industry as a factor in the advancement of the state. Coupled with the story of the California power shortage should go also the typical record of one Northwestern power company which has a steam plant on its lines ready at all times for standby service, to take

up a share of the load in case the operation of the water power plants of its system should be interrupted or should prove inadequate. It has not had to call upon the steam plant in twenty years.

As a matter of record, the standby provision of western power companies, that is, the reserve power over and above normal needs, held in readiness to take care of special demands, is much higher than similar provisions made elsewhere. As a matter of fact, the peak load—which is the greatest demand for electric power made upon the power company at any one time—is seldom more than 80 per cent of the capacity of the plants.

Construction Plans to Meet Future Demands

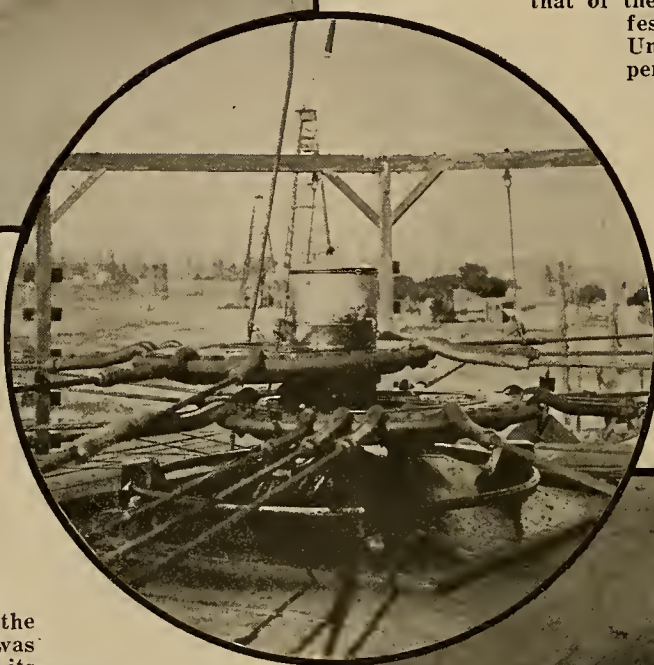
Will the public service industry be prepared to give adequate service for the increased needs of the future? It is only necessary to turn to the programs as laid out by the power companies and now under construction. The method used by practically all power companies in this district is to plot the curve of the demands on their systems over a period of some years and then to project this steady increase into the future, laying out a construction plan which will permit of a generous margin of surplus power over and above this demand at all times. As special conditions arise which would tend to modify this plan, construction is advanced or retarded to meet the situation. A questionnaire sent to power companies furnishing 95 per cent of the power used west of the Rocky Mountains, a little over a year ago, indicated that this program called for the addition of 2,850,000 hp. to the systems of these companies within a ten-year period. At that time the total capacity of all power plants in the West was 2,515,000 hp., which, as may be seen, allows for quite a healthy growth—more than doubling the capacity in a decade. During the first year, 1921, nearly one-sixth of this program was actually carried out and 287,129 hp. additional in new plants has been completed during 1922 or is now under construction. In California each one of the major power systems has added one



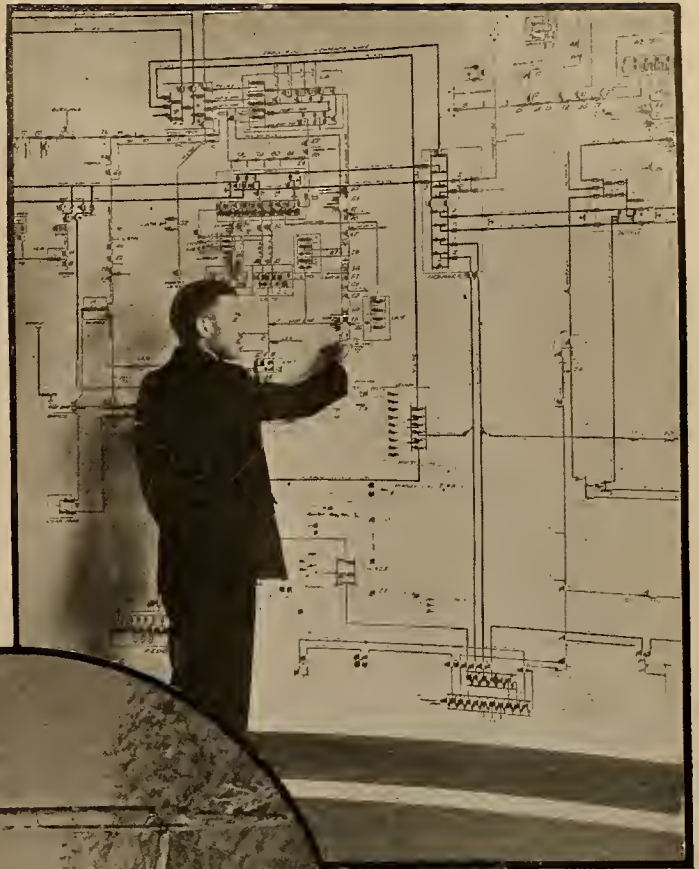
IT is difficult to visualize the tremendous efforts and the detailed processes which are back of the power as it is delivered to the customer's home. Among the great engineering feats which have made possible the bringing of power from the mountains to the cities, under conditions which seemed to offer insuperable obstacles, may be listed the longest distance transmission of power in the world, 832 miles across the desert on the system of the Southern Sierras Power Company, the world's largest high head impulse turbine in the Caribou plant of the Great Western Power Company, the largest high head reaction turbine in the world in the Kern No. 3 plant of the Southern California Edison Company, the present record for high voltage transmission held by the Great Western Power Company at 165,000 volts and the contemplated transmission at 220,000 volts by the Pacific Gas & Electric Company and the Southern California Edison Company, not to mention the extent of interconnected systems which now reaches from near the Washington border to Mexico—a far greater area, involving power at higher voltages than any contemplated in the superpower zone of the Northeast. All these things have made possible the generation of electric energy under western conditions and its transmission to distant market centers at the most economical figure possible, permitting the low rates for which this region

also holds the record. The picture shown is that of the high tension laboratory of Professor Harris J. Ryan at Stanford University where thousands of experiments have been performed in cooperation with power company engineers, designed to test the properties of insulators under high electric stress. This is but one angle of the problem whose solution has economical methods of high voltage transmission—and made possible the use of but one phase of the research work continually going on in the interests of efficient operation and ultimately lower rates to the consumer.

NOT only in the development of improvements in the line of providing electric service at lower cost, but in the research work which goes toward the bettering of conditions in industry, does the power company function. The oil fields of California today are pumped by electricity, a unique tribute to the supreme economies of electric service, not only reducing costs of oil and oil products for the state, but also helping to conserve oil. That the motor adaptable to this service was worked out and the conditions of its application made possible must be credited to the foresight and indefatigable persistence of a western central station manager, who saw in this development, not only a profitable field for his company, but a service to western industry. The field of industrial heating offers numerous similar examples of industrial problems solved by power company initiative to the benefit of all concerned. The problem of power generation in the West is the problem of water power development. With but eight and a half per cent of the population of the United States, the area west of the Rockies has seventy per cent of the potential water power of the nation, and twenty per cent of the electricity generated by water power in the United States last year was generated in the one western state of California. The water powers of the West, however, although abundant, are most of them located at great distances from the markets for power, in many cases in mountain fastnesses which it has required the construction of railways and highways to reach. An example of the efficiency of construction which has made possible the bringing of electric service from distant sources at the cheapest rates to the consumer is the Kerckhoff plant of the San Joaquin Light & Power Corporation which was put through in record time, in spite of water encountered in the rock and unfavorable weather conditions, the power being thrown upon the line sixty days ahead of schedule.



IN the load dispatcher's office of the Southern California Edison Company. As a consequence of the importance laid upon uninterrupted "service," the very watchword of the industry devoted to the generation and distribution of electricity has come to be summed up in that word. Through a tremendously intricate organization of machinery and man power, the myriad spider web lines throughout the country are kept charged with "service" always on tap at any hour of the day or night, ready to light a sick room or to keep turning the wheels of a great factory without a pause. This means incessant vigilance in every department—it means occasionally acts of great heroism in performing a service in the face of difficulties. Not the least interesting of the departments of the power company illustrative of the co-ordinated team work which goes to make up the servant, electricity, is the office of the load dispatcher. Here a diagram of the entire system is laid out before the eyes of this one man, who is in constant touch with every factor in the situation. If for any reason a power line should be struck by lightning, or a water wheel suddenly go out of commission, he is instantly apprised of that fact and uses all the resources of the system to prevent a breakdown of any department. Power is turned in to the crippled division from other plants, or the resources of other power companies, interconnected to serve just such an emergency, are called upon. At the time of a great natural disaster, such as an earthquake or flood, or even at the time of a quieter crisis when some extraordinary demand for power taxes the resources of the system, this office is a busy place. The interconnected system in which this dispatcher functions handled 4,300,000,000 kw-hr. over its lines in 1921, a block of power greater than that of any other interconnected system in the world. It is evident from this that the load dispatcher is rightfully called the nerve center of the power company system. "Service" starts from his office.



PATROLMEN are kept constantly on guard to warn of any breakdown along the thousands of miles of power company lines. In the case of any disaster, no difficulty is too great to be undergone to reinstate service promptly. A group of the California Oregon Power Company's "trouble shooters" are here seen repairing a double pole line which broke down under the effects of an unusually heavy snow storm.

What miracles can be performed in such a cause may be seen by the record of the recent Pueblo flood,

during which miles of transmission line were wiped completely out and the power house itself was flooded and almost buried in mud. By day and night work, emergency service was ready within twenty-four hours following the recession of the waters and power company service was one of the most important agencies in bringing order out of chaos in the remainder of the district. The power plant itself was completely reinstated within a ten-day period. The San Francisco earthquake offered similar examples of heroic efforts in the name of service. More recent is the Portland snow storm in the fall of 1921, which destroyed a section of the Columbia Highway and brought down miles of wires under the heavy burden of snow. At that time the entire force of the power company, from president to office boy, who could be spared from the operation of the system, turned in and worked for 36 hours without food or rest until the lines were again in working order. One of the most visible forms of the service performed by the power company is represented by the service wagon—ready at all times to respond to trouble calls, whether it be a line down, a customer's fuse which has given out and placed a home in darkness or a range which needs a replaced element. Recognizing that the commodity which it is selling, is "service," the power company stands prepared always to keep that service at par.

or more plants to its capacity and there is now a power surplus rather than shortage in every part of the state. This healthy condition will undoubtedly lead to the development of new markets, alike through the working out of new apparatus or the adapting of electric service to meet new conditions in industry and the extension of power use through attractive rates.

Possibilities of Rate Reductions

It has been pointed out that most of the rate reductions of the past have been made possible by advances in technical design or other economies of operation within the company which have reduced costs of production. There is no reason to expect that such advancement has ceased. There is, in fact, now under way experimental and research work in every field of power generation and distribution. An experimental high voltage line is now under operation by the Southern California Edison Company, which company is also supporting a laboratory for high voltage phenomena at the California Institute of Technology in Pasadena, similar to the one already in operation at Stanford University. The program of discussion at the annual convention of such organizations as the Pacific Coast Electrical Association, the Northwest Light and Power Association and the Rocky Mountain Division of the National Electric Light Association, is a record of studies made by individual companies to improve apparatus or conditions.

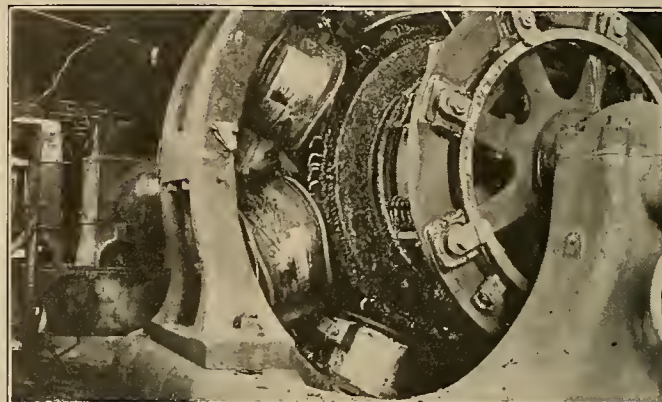
The Power of State Utility Commissions

The role of the state utility commissions is to safeguard the public interest in all this and to insure the provision of adequate service at reasonable rates. Few individuals appreciate what sweeping powers are thus vested in the state. The utility commissions of the respective states determine what bond and stock issues shall be allowed the utilities within their jurisdiction and what rates of interest shall be paid. They examine all expenditures made and determine whether the power company should be allowed to recover for them in the rates charged, specifying the methods by which accounts shall be kept; they evaluate the property at what they determine it actually to be worth and fix rates upon this actual unwatered investment, allowing something like an eight per cent return to care for the expenses of operation and the cost of money. If the service in any community is adjudged unsatisfactory, they have the power to insist that the power company in question shall provide satisfactory service or, as a final resort, to allow another company to enter the field which will give the service required. The utility commissions in the past have actually done all these things.

Forced Reduction of Expenses

There have been cases where they looked over power company books and judging the salaries of certain officials to be higher than necessary, have refused to allow for this expense—and others where they have refused rates which the power company had proved were necessary to cover expenses, hold-

ing that expenses were beyond reason. Whenever a period of national inflation causes the increase of costs and higher rates are allowed, the commissions became immediately unpopular. The spectacle of an Oregon commissioner recently recalled, because he voted for a higher rate, and the investigating committee of the state legislature which last year examined into the methods of the California Railroad Commission, are examples of such popular injustices. It is only fair to state that the California investigating committee, which started out with an acknowledged hostile attitude toward the commission, concluded with a report in its favor, justifying its meth-



When a cat formed a connecting link between the terminals of one of the 11,000-volt oil switches at the Northern Hill substation of the Portland Railway Light & Power Company a serious fire occurred in the early hours of the morning, damaging this rotary converter, transformers and arc-sets and other equipment. Service to consumers and street lighting service was restored by the company within 12 hours after the fire.

ods of rate fixing and urging that more power be put into its hands. It must be remembered that during the post war period when the prices of all commodities soared and increased on an average from 40 to 250% over 1913 prices, power rates the nation over, did not increase more than 15%. Practically every power system of the West has recorded rate decreases within the past six months and at the present time, rates in this section of the country are actually lower than they were ten years ago.

Western utility commissions in the past have attracted a very high calibre of man and their decisions have ranked as among the most far-sighted and progressive of any such judicial bodies throughout the country. It is to their credit that they have recognized it as their function to be just and have adjudged it to be to the best public interest to allow the power companies, when giving good service, to make a fair profit—a term which may be defined as a return sufficient to attract new capital for the necessary expansion of power company systems. Such of the public as recognize the absurdity of distrusting the utility commission, whenever the decisions happen to result in higher rates, are fully aware of the importance of these bodies in guaranteeing adequate and reasonable power service for the future, and for the remedy of such faults of service as still exist, count upon strengthening their hands still further. In the utility commissions of the West lies the best answer to the question, "Can and will the West be satisfactorily supplied with electric power?"

Service—the Electrical Manufacturer's Point of View

WEBSTER has recognized the word service to the extent of giving it eighteen separate and distinct meanings. To the electrical manufacturer it has but one meaning—the essence of his business—the production of standard equipment improved to keep up with the needs of industry, placed on the market at as reasonable a price as possible, effectively merchandised and backed up by an absolute guarantee. The many ramifications of this general definition constitute an advantage to the consumer of electrical equipment, machinery, appliances and supplies, which places the electrical manufacturer far to the fore among the ranks of those charged with supplying the public with a manufactured article or commodity.

The West, because of its geographical position with relation to the eastern manufacturing centers, its diversity of natural resources and its abundance of cheap hydroelectric power, is in a position to better realize the importance of the service which the electrical manufacturer offers.

Briefly, the service which the electrical manufacturer stands ready to furnish to the electrical industry, to industry in general and to the public divides itself into four different classes, factory service, field service, merchandising service and publicity service. From the standpoint of the consumer of electrical goods, the first two are the most important; from the standpoint of the distributor, the last two. Irrespective of the relative importance of its various phases, it suffices that the service of the electrical manufacturer stands out unique in the annals of better business.

Manufacturers Endeavor to Aid Industry

In few fields have the efforts been greater to extend the usefulness of machinery and to broaden its applications to industry, than those exhibited by the electrical manufacturer. To this end, elaborate research laboratories are maintained at the home factories, and trained corps of experts are constantly studying the problems of industry to perfect equipment which will do the required work more economically and with more profit. The development of the natural resources of the West has furnished some typical examples of this phase of the electrical manufacturers' service. Motors and equipment have been perfected which reduce the cost of oil well pumping by almost half, in addition to performing more efficiently than any machinery which had hitherto been engaged in this operation. Electricity has been applied to logging with excellent results. Vast fortunes in gold, buried in the gravel of old river beds, have been recovered as the result of the perfection of the electric dredge. The large electrical

manufacturers maintain engineers whose duty it is to investigate and study the problems of individual industries. Engineering organizations are perfected for each of many industries. Countless new developments have resulted from the work of these men, and in each case, the results obtained have been passed on to the public.

This is a phase of factory service which has been in vogue for such a long period of time that it has come to be expected. Even at the present moment tests are being made in the iron ore producing sections of the Intermountain district with electric furnaces for the cheaper production of steel.

The Field Service of Manufacturers

It is the field service conducted by the manufacturer with which the West is perhaps most familiar. Geographical location, with respect to eastern manufacturing centers, has tended to develop a field



Stock valued at \$1,000,000 is carried in this warehouse so that orders may be filled in 24 hours' time. This is but one feature of the unique service which the electrical manufacturer offers to the West.

organization with western offices comparable to the organizations maintained by the home factories. Offices have been established in western business centers, warehouses erected and special facilities provided for handling repairs and servicing equipment. Trained engineers stand ready to aid industrial plants in choosing and installing equipment. Every facility is maintained for supplying the needs of a trade located thousands of miles from the manufacturing centers.

An idea of the steps which have been taken by the manufacturers to provide service for the eleven western states can be gained from a description of the activities of one representative concern. Branch offices are maintained in five western cities with Pacific Coast headquarters in San Francisco. In that

city alone the company has an organization of approximately 300 people, a warehouse with 150,000 sq. ft. of storage space and a shop capable of handling any type of repair work on the company's products. In addition it maintains an instrument standardization laboratory, one of two in the West. In order to assure prompt shipments of goods, a stock of over \$1,000,000 is carried in its warehouse. Orders are filled from stock in 24 hours. The company also includes in its organization a crew of construction foremen whose duty it is to supervise installations of machinery of various types.

So important has electricity become in the growth and development of the West that several of the large eastern manufacturers have found it neces-



Service from the point of view of the manufacturer entails more than the delivery of goods. Organizations have been perfected for repairing equipment under extraordinary conditions. This is one of the shops maintained for the repair of all types of the equipment.

sary to establish branch factories in western cities so as to better serve this section of the country. Numerous typical western factories, which are constantly growing and expanding, have also sprung up.

The Merchandising Service Performed

It is the merchandising service performed by the manufacturer with which the electrical industry is most familiar. As trained engineers are maintained to serve industry, so are trained merchandising experts held ready to aid the electrical dealer and jobber in solving his problems. These men are ready at all times to give advice to the dealer regarding the better conduct of his business. Publications designed to furnish information regarding the latest developments in merchandising electrical supplies and appliances are issued from the factories. Advertising copy is prepared and electrotypes of such advertisements are furnished. Suggestions for window displays are worked out and material for arranging the displays prepared. Educational campaigns are developed and experts placed in the field to help the dealer to increase his sales.

As a part of this service manufacturers have also established stations where the dealer may send appliances for repairs. These "service" stations are centrally located and equipped so as to make any

class of repairs on appliances in the shortest possible time. Thus the dealer is enabled to send material to these stations for repair at a minimum cost to the customer.

Building of Good Will for the Industry

The manufacturer plays an important part in the building up of the electrical industry in general, a voluntary service which involves the electrical good-will story. National advertising campaigns emphasizing the usefulness of electricity is one method employed. More recently manufacturers have utilized the motion picture for carrying the electrical message into millions of homes. While such films may concern the manufacturer's product, they are primarily designed for stressing the electrical story and are decidedly popular. For proof, witness the record of the film which deals with the history of light, at the same time tracing the development of the Mazda lamp.

Among the heaviest subscribers to the various cooperative agencies within the electrical industry are the manufacturers, which is but another evidence of the service performed by them. They are ever willing to assume their share of the task of bettering the industry in general and giving publicity to the electrical story.

Taken by and large, every act of the electrical manufacturer, every effort to better his own business and business in general, involves service. Volumes could be written about individual cases which demonstrate the elements which make up this service. Nothing has been said of the financial aid which he extends to soundly organized dealers, itself a great service; nor of the steps taken to expedite shipments or complete emergency repairs.

Taken compositely, these many individual instances prove that the electrical manufacturer practises the theory of "commerce with a conscience," that his is a business based on service,—service that



Distance from eastern manufacturing centers necessitates an elaborate organization of offices, warehouses and shops in order that the electrical manufacturer may efficiently serve his western customers.

means first, a product designed and intended to increase the store of human comfort and happiness; second, honestly made as to quality and workmanship; and, third, offered at a price that is admittedly fair to both seller and buyer.



The sales force of a jobbing house is the connecting link between the manufacturer and the dealer and contractor. The sales department of which that of the Illinois Electric Company of Los Angeles, depicted above is a typical example, is one of the greatest educational forces in the industry.

The Electrical Jobber's Service

THE essential problem of distribution is to bring producers and consumers in as close business contact as possible, and thus diminish the cost to the consumer by removing the expensive operation of having the goods pass through the hands of the middleman. The orthodox distribution system consists of two middlemen—the wholesaler and the retailer. Efforts to eliminate the middleman have in a large measure failed, because the stubborn fact remains that the prevailing system perseveres because, like trial by jury—admittedly a faulty legal procedure of law—no better way has yet been found.

The wholesaler in the electrical business, the jobber, continues to grow and more firmly establish himself because he is an economic necessity, a needed cog in the machinery of distribution. The jobber buys in large quantities, and in wide variety, generally from many manufacturers, assembles these stocks, stores them for seasonal demands, oftentimes sorts and repacks the goods and then finds his customers and supplies them with suitable quantities at suitable times. He is in addition a great accounting and credit agency in the industry.

Jobber Exemplifies "Service"

The jobber is engaged in giving daily demonstrations to his customers—the retailers, contractors and power companies—by means of prompt shipments, by large and well chosen assortments, by the employment of good salesmen and well-compiled catalogs and by persistent advertising,

that he is the exemplification of "service." To cite an example: The average electrical dealer has a stock of goods made up of several thousand articles, very few of which he buys in any quantity. He finds that he needs a dozen items each made by a different manufacturer, and none of these items in sufficient quantity to make enough weight for a freight shipment, and it is much too expensive to have them come by express. Moreover, the manufacturers of these needed articles are all distant—all the way from the Middle West to New England. The delay is too long to be considered, and moreover none of the manufacturers could afford to sell the retailer such small orders, as their credit and selling forces are necessarily constructed on the plan of selling large quantities of goods to comparatively few merchants. So the retailer finds that the most economical thing he can do is to send an order for the entire list of goods to the jobber with whom he trades and who carries all the items in stock ready for prompt shipment.

Stabilizing the Industry

To the manufacturer the jobber represents another kind of "service." He performs the service of distributing at a cost lower than the manufacturer and he carries slow moving stocks covering new lines for which he is engaged in building a future demand. The jobber's contracts with the manufacturer extend over a long period of time and are on established terms. His financial stability and the size of his orders permit the manufacturer



Samples of the various types of materials handled are displayed in the sales rooms of the Electric Appliance Company of San Francisco, shown above. This concern is one of the many firms in the West rendering service to manufacturer and customer by sharing the manufacturers' risk and extending credit to customers.

to gage with accuracy his future production. The jobber takes the risk of being able to market the goods. The manufacturer is thus enabled by quantity production to reduce the price of his goods to the consumer.

By dealing with a comparatively few established jobbers whose credit is known the manufacturer is relieved of handling a diversity of accounts and maintaining a burdensome credit and collection department. The proximity of the jobber to his customers, makes possible a broadening of the market for electrical products by the extension of credit to customers who have no credentials other than the jobber's knowledge that they are good moral risks.

Jobbers realize that the justification for their existence lies in the rendering of a service. The methods by which this is accomplished are many and varied. Successful jobbers have elaborated and expanded upon the general duties of a wholesaler, so that prices and articles being the same, business is attracted by additional value which is created through some additional form of service.

The territory which a jobber covers is that territory contiguous to his place of business which he can economically serve, considering at all times

the transportation rates from warehouses to customer and the time element involved. He serves intensively this territory, striving to obtain maximum sales results and to handle credit and collections to best advantage with minimum expense.

Salesman Is Great Educating Force

The jobbers' salesman, who is the means by which the contractor and dealer is put in touch with the manufacturer, must be of high caliber. Through the salesman the jobber extends his personal service to the dealers and contractors with whom he deals. The salesman is a business adviser. His counsel to the dealer as to a selection of materials, quantity of purchases, seasonal demands, window dressing, counter display, arrangement of shelves and store rooms is invaluable. The salesman may also instruct his customers in bookkeeping methods, and how to handle collections. He often extends engineering advice and helps the contractor to secure contracts by furnishing him with necessary information. In fact, in the jobbers' salesman lies one of the greatest educating forces in the industry. And just as quality and service are the measure of success of a product, so will the success of a distributor be measured by the quality of his salesman and the personal service he renders.



The jobber, with his large buying power and knowledge of world markets, gathers materials from all parts of the globe, stores them under one roof and has them ready for prompt delivery on short notice.

The Contractor-Dealer's Contribution to Electrical Service

SERVICE is any work performed for the benefit of another; a benefit or advantage conferred. In the electrical industry it partakes even more of an altruistic nature, for in the long chain from producing electrical energy to that point where it is put to some universal, yet personal, application, there is no service greater than that provided by the aggressive, constructive-thinking contractor-dealer, sometimes known as the electrageist.

It is he who installs the medium through which application of the energy can be made. Whether it be homely old knob and tube work or the latest development in conduit installation, the job is worth many times its cost to the consumer in terms of satisfactory service.

It is through the contractor-dealer that the real "quality" of electrical service is expressed. In selecting the appliances and materials which stock his shelves, and in making the installations, using these materials to the best advantage, the electrageist functions in terms of quality and service.

With a quality wiring installation, and this means adequate feeds, sufficient circuits, convenience outlets and plenty of them, switching and cut-out facilities, the real value of electrical service can be brought home to the consumer or the customer, as many central stations prefer to call him. This, however, depends on the realization by the contractor and the customer as to the necessity of high standards in the work and not on the dollars and cents basis where an outlet here and a switch there are eliminated from the job.

Only after the job is completed and the loop placed, can the motor be made to run, or the range to cook, or the electric music box to jazz, or lighting effects secured. This is where Mr. Average Man gets his real appreciation of electrical service. With the job well done, and a proper knowledge of applied electrical service, he can be made to grasp the real import of the work which the kilowatt can be made to perform in his store, office, factory, or home.

Electrical Contracting Specialized Service

Intelligent electrical contracting is a specialized service. It is something more than selling wire, pipe, boxes, fixtures, and lamps. In a way it is the fabrication of all this equipment, and more, into a workable machine energized by electricity which can be made to function as the servant of mankind at the flip of a finger.

Central stations may be said to sell electrical service but the contractor-dealer is the one who purveys it, for the reason that the energy in the abstract would not be worth anything were it not for the application which can be made of it through the facilities which bring the incandescent lamp, the

motor, or appliance into play. Theirs is a service, a utility for which Mr. Average Man is willing to pay well when he is served intelligently and conscientiously.

Inter-relation of Branches of Industry

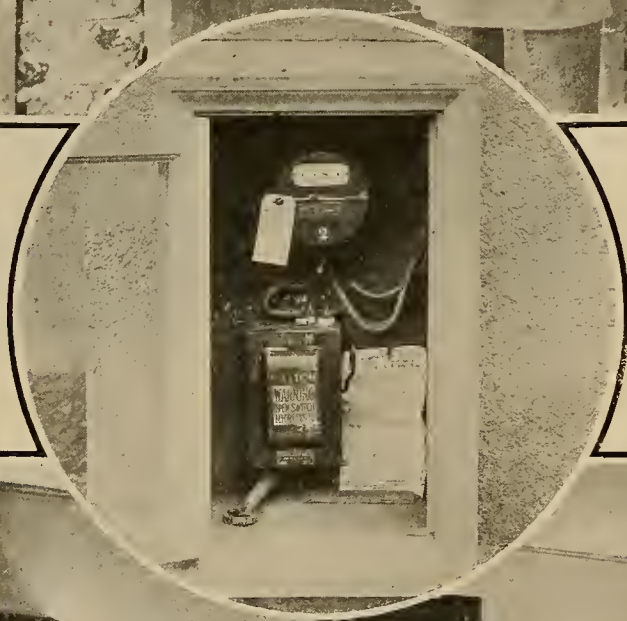
In making his part one of the supreme features of electrical service, the contractor-dealer has the assistance of all of the other branches of the elec-



A typical western contractor-dealer's store showing the good display windows used by this class of merchant and his service truck ready to deliver supplies to anyone who may need them in a hurry. This dealer's belief in his products is shown by the use of a large electric sign.

trical industry. The manufacturer, the jobber and the central station, through the agency of the various cooperative movements, are aiding him to carry his service message to the public. The representatives of the manufacturer and the salesmen of the jobber, are showing him methods whereby this service may be improved. His is a well fortified position for the rendering of service to the public. The goal of higher standards and better service is the aim of the entire industry. From now on the campaign will be waged in these terms if the electrical business is to succeed in the way it should. The establishing of merchandising departments by the manufacturers shows the trend of the times. It places distribution, sales and servicing above engineering and production. Economic balance demands that all branches of the industry co-ordinate accordingly.

From the standpoint of merchandising equipment and appliances, the contractor-dealer's establishment is a specialty store. The whole point of the specialty store is specialized service. The contractor-dealer bases this conscientious service upon a proper understanding of the electrical business, which means giving service, showing by examples, the precepts of proper illumination, the elimination of loose ends in buying and warehousing, the absolute necessity of advanced selling ideas, aggressive advertis-



THE work of the contractor-dealer starts after the bare framework of the house is set and continues up to the time that he installs the last fixture and electric light bulb. The service of the contractor-dealer starts with the installation of the meter box and continues as long as the house may stand. An example of one phase of this service—adequate convenience outlets—is shown in the two accompanying pictures. Ten outlets were installed by the contractor-dealer in the room pictured of which only four are shown here.



ing, and the establishment of a reputation in the business world. Quality service is of no meaning unless backed by knowledge and reputation.

In the metamorphosis of business upheaval of the past two years, there has emerged a type of contractor-dealer who fully understands the functions of the specialty store and the specialized service which is expected of him. What the specialty store and its service means has been described by one of Colorado's most successful electragists, who says:

"I pretend that I am a customer interested in the purchase of some electrical merchandise. I then ask all the questions the average customer would expound and then answer them to the best of my ability. I try to get the customers' viewpoint for in that way I serve them best."

Electragists Strive to Serve Public

In his desire to give better service, this successful electragist studies his goods. He listens to the sales talk and helpful advice of the jobbers' salesmen and manufacturers' representatives. He asks his employees about the merchandise they sell. He reads trade papers and never fails to look at the advertising. He reads store advertisements and especially those of his competitor. He consults books and is in fact "a walking encyclopedia" of helpful service.

This contractor-dealer is typical of the class of men who are making electricity and service synonymous. He knows that when the latent possibilities for merchandising success within the electrical industry become generally known the highest type of merchandising brains will be attracted. Competition will become doubly keen—only the fittest will survive. So he is preparing himself to render such complete service to his customer that he will insure his own survival.

This contractor-dealer or any with similar ability and ambition is removed from the storekeeper class. He fits equipment to the needs of his customer. He is in a position to intelligently advise on all problems of electrification as it affects the man in the street.

Early last fall this same contractor-dealer was called to a home by an elderly lady who, because of infirmities, could not look after the furnace or stoves during the day and thus keep the house properly heated. It seems she had heard that the radiant type of electrical heaters could be installed all over the house and the heating problem would be solved.

Instead of forcing a number of heaters on this unsuspecting old lady he told her frankly and candidly the part electrical heaters play as adjuncts to the main heating system when only lighting circuits are available for connection. Surmising her modest means, he knew that the system would be economically unsound. He explained carefully the reasons and, although disappointed, the lady admitted the impracticability of her idea. Later, however, he sold her one heater that became her constant companion.

Opportunities to Increase Service

Contractor-dealers have found that convenience outlets are the key to broader electrical service in the home. This is logical for the reason that where there is a way, application will be made. If there is no hardship or inconvenience in plugging in the toaster for the breakfast meal there is likely to be a desire to connect up the percolator or other table appliances at other meals. Electrical equipment will not be relegated to the shelves under such circumstances. Proper illumination effects can most easily be secured when portable lamps are available for connection with convenience outlets. The fullest use of electricity in the home is made possible through these outlets. In no place in the home can a better investment be made than in a proper and adequate wiring installation. Why not make it complete? Why not add to it instead of eliminating outlets for the sake of a lower price?

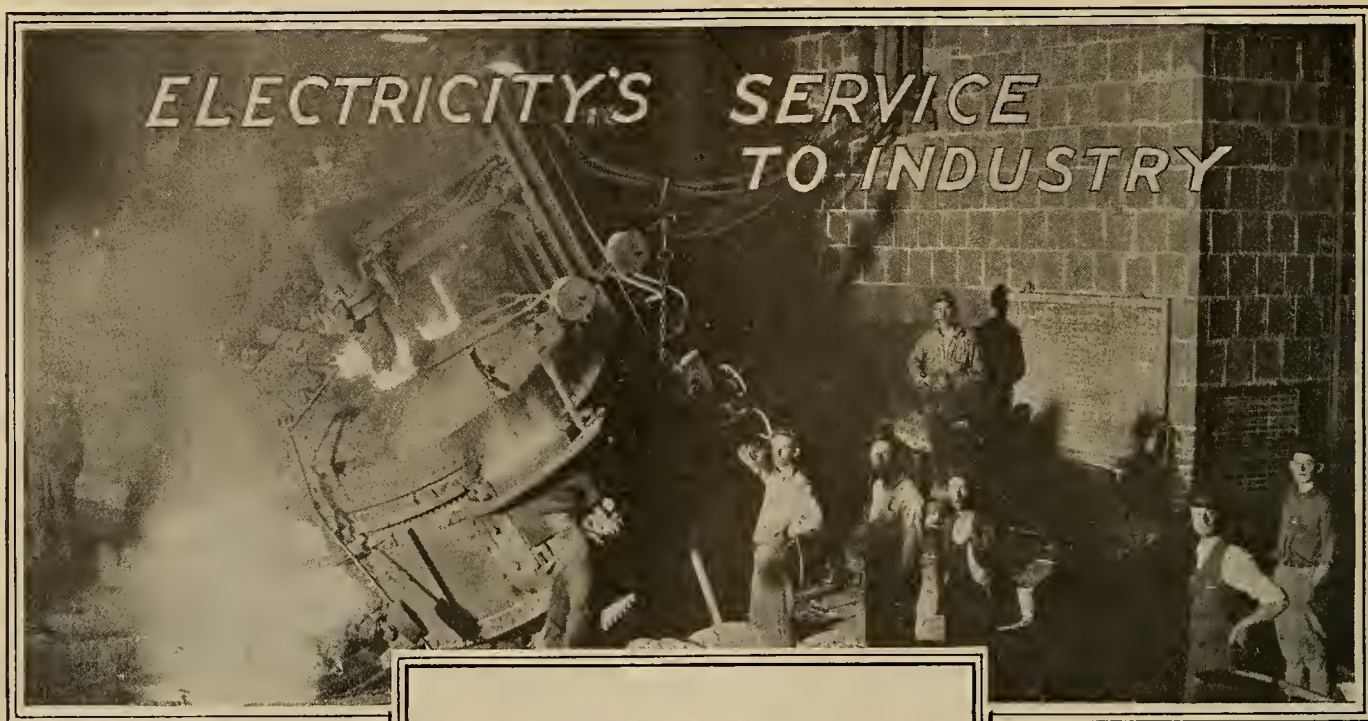
In some cities firms are found that do a plumbing and heating business along with their electrical activities and because of their experience in the former lines they usually make more complete electrical installations than some of the electrical brethren who believe in the saying, "Not how good but how cheap." If the plumbing business was based on this conception of service, it is believed that many of our modern homes would be found without a bathroom or running water in the house. Yet it was not so many years ago that this condition was an actuality.

Advancement of Proper Electrical Ideas

Let it be said right here that the electrical contractor-dealer is in an envious and vulnerable position to advance the ideas of proper electrification more than any other class in the industry.

The same situation applies to the servicing of equipment and appliances. No mechanical device is perfect at all times. Lack of knowledge on the part of many users is responsible oftentimes for the short life of many appliances. In some cases there may develop defects but at any hazard when the equipment ceases to function and perform the duty intended and desired it becomes necessary for the electrical repair man to use his best ability in rehabilitating the device. Skilled service men whether it be on an iron or washing machine are employed. A stock of repair parts is kept on hand. This is where the electric specialty store differs from the department and hardware store. It is the one differentiating factor to be emphasized to the prospective purchaser of electrical equipment.

Service is the secret of success in any business. It is the keynote of the best thought in the electrical industry today. The contractor-dealer realizes service is progressive and may be constantly improved. The Chinese have a saying that is worth remembering—"If you bow at all, bow low." For the contractor-dealer, it means "playing the game one hundred per cent" by providing the fullest realization and appreciation of electrical service in all its ramifications.



By Louis F. Leurey

ALL four branches of the electrical industry have contributed to the splendid quality of electrical service which has been responsible for the rapid electrification of western industrial plants.

THE modern industrial plant is a common meeting ground for every department of the electrical industry, for no other user of electrical energy can show such a wide and varied field of application.

The applications of electricity in the industrial plant occur in three principal fields: first, in the department of motor drive where the electric motor has practically supplanted the steam engine, the gas engine and all of the older forms of prime movers in the driving of all classes of machinery. In some cases this change has been made by means of a single or several large motors which drive groups of machinery and in other cases by means of individual applications of one motor to each machine in the factory.

The second main field for electrical applications in the industrial plant is the use of electrical energy as a medium in carrying out some steps in the main manufacturing processes. Among the most notable examples in this class of electrical application is the use of electrical heat in japanning ovens, core ovens, porcelain kilns and bread baking, in all of which applications the perfection of electrical heat control has more than offset the comparatively higher cost as a fuel. Other uses of electricity as a medium in process work are exemplified in special devices for controlling temperatures of liquids, opening and closing of valves and gates by automatic control and the interlocking of conveying systems, all of which give to the modern industrial plant that perfec-

tion of control which was never possible of achievement before the introduction of these electrical features.

The third major application of electricity in industrial plants is in the form of modern illumination, and this one feature alone has been of untold value to industrial plants, especially those which have to operate throughout a twenty-

four hour period. In a well planned, modern factory, with properly designed night illumination, there is very little to choose between the day output and the night output, from the point of view of efficiency. Modern illuminants properly applied have resulted in a quality of working light which at all times even exceeds that of the daylight, as it has that constant uniformity which never completely exists due to the varying changes in daylight conditions.

The introduction of these three main features of electrical application in the modern factory is the result of a continuous and consistent promotion effort by influences outside of the industrial plant itself. The first and what might be called the pioneer branch of electrical industry to exert its influence on the industrial plants is the electric power company. It must be remembered that when the pioneer power companies on the Pacific Coast were building up their networks, the industrial plants had been developed primarily by mechanical engineers, chemists, and manufacturers, almost none of whom had either experience or faith in electrical drive, and further, that these industrial companies at that

early period had incurred large investments in the form of steam plants and other classes of mechanical power.

It was thus the Herculean task of the power companies, not only to create faith in electricity as a new form of motive power, but also to demonstrate that its efficiency was sufficiently great to warrant the writing off of less efficient forms of power. That the power companies have achieved this great work

of modern control development is the gradual elimination of the human factor and human error in the starting, stopping and varying of electrical impulses, and no finer example exists of the utter dependability of electricity as a motive force than the accuracy with which these devices now function day in and day out without interruption or failure.

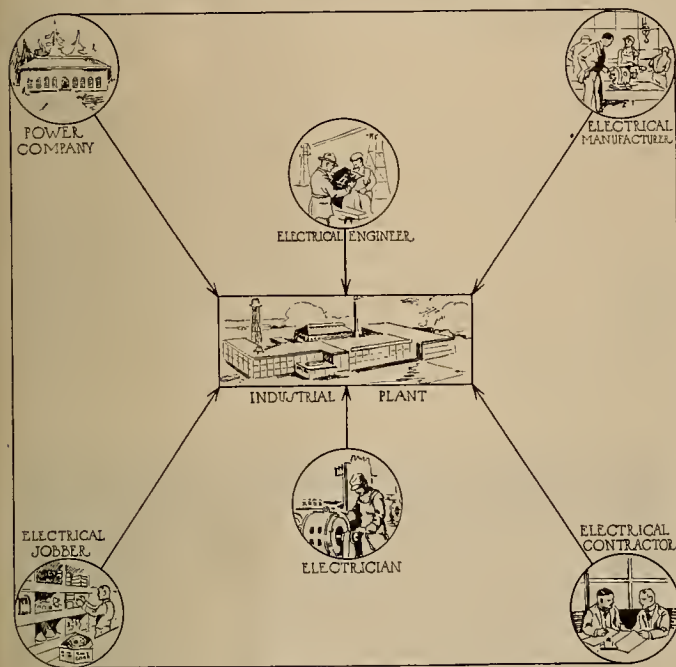
Need for Skilled Installation Men

Paralleling the work of the power companies and the manufacturers of electrical equipment, there came the economical necessity for an organization capable of furnishing the necessary skilled labor and materials for properly installing electrical equipment within the industrial plants. In the very early days some of this work was done by the manufacturers and power companies, due to the lack of trained men outside of the industry, but with the growth of industrial plants came the development of electrical contracting firms as we know them today, which undertook for the industrial plant the furnishing of an organization that would properly install all electrical equipment, so that it would not only be free from operating troubles but that the plant would also be safeguarded against fire hazard, the principal risk which existed from improper installations of electrical wiring and equipment.

With the extremely rapid development of electrical applications and the enormous multiplication of electrical devices, it soon became necessary for some stable commercial body, formed on the basic principles of good merchandising, to handle the enormous stock of supplies which was required by the electrical contractor and the growth of the modern electrical jobber was the outcome of this demand. The jobbing business has increased from original small dimensions into concerns of national importance, in whose stockrooms can be found every device that enters into the whole range of electrical applications and whose inventories run into enormous sums of money annually.

Electrical Organization Within the Plant

All four of these major branches of the electrical industry are naturally closely interlinked and each has contributed his share to that splendid quality of electrical service which, more than any other thing, has been responsible for the enormous growth and speed of electrical applications in the early stages of electrical development in industrial plants. These branches have of necessity had to overlap one another in their effort to promote a unified installation, and all of them have maintained, through force of necessity, engineering staffs who have contributed a high quality of development to apparatus and to principles that were originally worked out in the laboratory and designing rooms. In fact, it can be said without exaggeration that practically the entire earlier development of electrical applications in the industrial field has come from outside the industrial plant and has been the result of independent and concerted effort of the power companies, electrical manufacturers, electrical contractors and jobbers.



The graphic illustration above shows how the electrical industry serves the industrial plant. The four branches of the industry are all closely connected with each other and are directly in contact with the men in charge of industrial enterprises. The electrical engineer and the plant electrician are the men who are in most intimate touch with the conditions in the industrial plant.

exceedingly well is without question, and today on the Pacific Coast there is the most complete exemplification of electrical drive to be found in any part of the world.

The Work of Electrical Manufacturers

Working side by side with the power companies in these pioneer efforts, the manufacturers of electrical machinery and equipment carried out their share in the program and it is due in a great measure to the never-ceasing improvements which these manufacturers have achieved in all classes of equipment that electricity has been enabled to make such strides in industry.

With the development of an alternating current motor came an enormous stride in the industrial application of electricity and it may be said, to the eternal credit of the electrical manufacturing industry, that many of the first alternating current motors which they developed, are operating successfully today in many industrial plants and compare favorably indeed with the most modern motor developed. In the field of electrical control, however, the manufacturers were not so fortunate in reaching their stride in the earlier applications, for the modern industrial plant today enjoys a perfection of control which would certainly have been the envy of any of the earlier applications. The whole trend

Until comparatively recent times the electrical policy within the industrial plant was controlled and developed by the original group of mechanical engineers, chemists, and manufacturers who had developed the original processes, equipment and mechanical drive, and the only electrical talent employed by these controlling forces was the practical plant electrician. These electricians were quite often men who had been operating as mechanics, employed by the electrical contractor who installed the original electrical equipment in the factory. Again, they would be drawn from the service department of the electrical manufacturer where they had learned the art of winding motors and making all classes of electrical repairs, but rarely if ever were they drawn from a trained engineering staff of any of the plants. The development and training which these men had received came primarily from their own experiments within the industrial plant and aided by the advice and assistance which they had received from the engineers and service men of the major branches of the industry.

In the last few years, however, the magnitude and importance achieved by the electrical applications in the larger industrial plants has forced the recognition and employment of trained electrical engineers who have developed from within the industrial plant a policy of efficient and co-ordinated application which could not otherwise be ever fully accomplished.

Due to the pioneer influences indicated in the earlier part of this article, the major electrical groups, namely, the power companies, manufacturers of electrical equipment, electrical contractors and electrical jobbers, were gradually led into a policy of over-servicing the owner of the industrial plant. As these owners had looked originally in the pioneer days for engineering advice on all electrical questions, so they continued to look to the major groups, but fortunately this condition is now being gradually eliminated. The major groups of the electrical industry recognize that their own interest is best served by the intelligent development of electrical knowledge within the industrial factory. The increasing magnitude of electrical usage in the factory has convinced the industrial manager that not only is electrical engineering within the factory a necessity but that it is the most economical administration that can be obtained. Today the modern industrial electrical engineer is taking his place as a complete and efficient interpreter between the electrical industry and the industrial world in general.

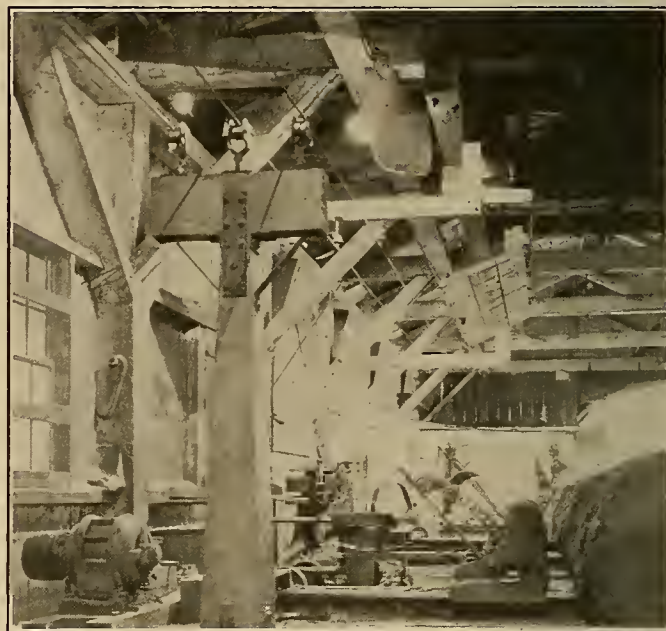
In the field of power service, the gradual extension of electrical knowledge through the industrial plant has produced a much higher degree of co-operation between the users of electricity and the public utility companies. This is evidenced by the much higher class of receiving substations which are being built and by the much wider application of synchronous motors and other devices which not only tend to improve the character of the load to the central station company but also to improve the efficiency of the application within the factory.

In the realm of electrical motors and equipment, as pointed out before, the modern tendency is to refine equipment to the point where the errors due to the human factor are practically eliminated. Not only does this result in a far lower upkeep in electrical apparatus but results in a correspondingly increased output from the machines controlled. This control equipment has in fact made possible many substitutions of electrical drive for mechanical drive that were impossible under the cruder forms of electrical control. The applications of electricity in the steel mills are an especially noteworthy example of fineness of control on machines of high concentrated power.

Advances in Electrical Installation

In the field of electrical installation under the influence of the general advance of industry and under the guidance of the various codes and commissions, the quality of electrical work done by the contractors is today immeasurably better than was done even a comparatively few years back.

Installations turned out today by responsible contractors are most excellent examples of protec-

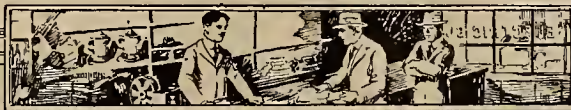


A 10-hp. induction motor driving the power set-works for a log carriage in the Carlisle Pennell Lumber Company mill at Onalaska, Wash. Power for driving the motor is secured from three trolley wires which may be seen in the upper left hand corner of the picture. This is only one of the electrical installations that have been devised by men of the electrical industry for the use of sawmill operators.

tion against fire risks, interruptions to operation and an almost complete absence of personal hazard. The appearance of electrical installations has changed from what was formerly the least attractive part of an industrial installation into one of its show fea-

The one thing now needed beyond anything else in the final development of the use of electrical energy within a factory is the creation within the industrial plant of the habit of thinking in electrical terms, so that no matter what the problem under question is—be it one of motor drive or be it one of process application—the management of the industrial company will naturally turn, for a solution, to Electricity—the Universal Power.

JOBBER, DEALER AND SALES AGENT



Airplane Used as Modern Delivery Service Aid

**General Electric Company Sends Motor to San Joaquin Valley
Dealer Showing Opportunity for Rapid Deliveries**

Use of the airplane for delivery purposes was recently adopted by the General Electric Company's San Francisco office. A rush order for a 1-hp. motor was received from the Turner Hardware & Implement Company of Modesto, Calif., at 11 o'clock one morning and by 2 o'clock of the same day the motor was in the hands of the dealer. The best possible delivery that could have been secured by ordinary express would have been at 9 o'clock of the following morning.

The motor sent by the General Electric Company weighed 100 lb. and the charge for delivery was \$35. This cost is rather excessive when first noticed, but if the conditions which often necessitate a quick delivery are considered the charge of 35 cents per lb. will not seem excessive.

The chief use that will be made of this aero express service, will be for the sending of motor parts. These parts may be ordered by telephone and will be delivered to the points in the San Joaquin Valley that are touched by the aero express service which is op-

erated by the Pacific States Express Company. At present Stockton and Modesto are the two cities reached by this express service, but the company plans to extend service to Sacramento, Fresno, Bakersfield and Los Angeles.

Motor parts are not excessively heavy, and therefore it will be possible to secure these at a cost which will not be prohibitive, should conditions necessitate a speedy delivery. Among those to be benefited by this extension of the General Electric Company's delivery service will be all sorts of industrial plants in the valley, canneries, etc., and also farmers who are in urgent need of pumping equipment for irrigation.

Manual of Estimating Prepared for Association Men

As the result of the composite work of the actual experiences of a number of practical estimators, has come the Manual of Estimating of the National Association of Electrical Contractors and Dealers. This piece of printed matter has just come from the press

and is to be distributed among the members of the association only. It is said to be one of the most useful pieces of literature ever distributed by the national body.

The Manual is in pamphlet form and is classified in four parts: (1) Taking Off Material and Use of Forms; (2) Labor Cost Data; (3) Job Conditions Affecting Branch Circuit Work; (4) Tables of Standard Times. This last section contains sixteen tables which include standard times on branch circuit conduit, outlet boxes, cabinets, lighting and motor circuits, switches and plug receptacles, and such work as comes to the contractor daily.

A discussion of the methods of arriving at unit costs and labor cost data in general are contained in the second part. This material is all explanatory of the tables and takes up the efficiency of electrical workers. It also shows how to figure their time and how to arrive at the proper figures in applying labor costs to the job.

The Manual is the result of several years of study and research on the part of those members of the Cost Data Committee of the association. Arthur L. Abbott of St. Paul, Minn., has been the chairman of the committee for the past two years. In addition to the Manual of Estimating, Mr. Abbott has brought out a set of forms which he recommends for use with the Manual. Actual use of these forms has proved their utility and value.

All of the methods and systems described in the Manual have been tried out under actual working conditions and have been highly praised by the electrical contractors who made the experiments.

The Mine and Smelter Supply Company in Denver has made several additions and changes to its personnel, according to an announcement made by S. M. L. McSpadden, local manager. E. K. Bacon will return to the Denver headquarters from the Wyoming territory, while H. E. Leigh, a former central station man, has been added to the Westinghouse department. R. S. Rubincam has returned to take charge of the mill supply department. Jim Ryall, head of the electrical department, is making a tour of the entire territory. H. J. Gundlach, general manager, is reported improved in health although still under a doctor's care.

F. X. Kaffer, district representative in Denver of the Consolidated Lamp and Glass Company, is assisting W. J. Keating in establishing the new fixture jobbing business of the Electric Supply and Construction Company.



Transferring the motor from truck to airplane at the landing field 30 miles below San Francisco. The trip from this point to Modesto, a distance of 80 miles, was made in 1¼ hours. Airplane transportation is adapted principally to the delivering of small parts.

Seattle Dealer Finds Modern Store Business Asset

Believing that to bring business to his store a dealer must not only have the best appliances and wares on the market ready to display to his customers, but that he must also have an attractive and up-to-date store, has brought Hugh A. Wilson to a place near the top in the electrical business in Seattle, Wash. Fifteen years ago Mr. Wilson opened an electrical store under his name and ever since he has been the owner and active manager of his firm.

The present store has been occupied by the electrical dealer for about a year. It is a brick and tile structure of pleasing architectural design, and equipped with adequate floor space and good display windows. Situated as it is in the University district of Seattle, the attractive front serves to encourage prospective purchasers to enter the store.

The interior is so arranged that persons who enter it are able to see the various appliances and electrical devices that are placed on shelves around the walls of the store. The entire store is well illuminated, giving the prospective buyer another opportunity to see for himself the stock that is carried without making the salesman remove it from the shelf. As soon as a customer asks about any article the salesman brings it to him to allow him to view it at close range.

Mr. Wilson pays a great deal of attention to his display windows, keeping them well decorated at all times with modern appliances. The displays are changed frequently and are made to tie-in with any advertising that he may be conducting at the time. The windows are well lighted at night, thus allowing women the opportunity of bringing their husbands to see the electrical devices after office hours.

In addition to carrying on a retail business the firm specializes in time and material contracts and stands prepared to submit competitive figures on any jobs where the customer may so desire. A large line of appliances and

fixtures is also carried for the jobbing business conducted.

Before coming to Seattle in 1907 Mr. Wilson was associated with the Wagner Electric Company of St. Louis, first in the factory and then as a salesman. While holding the latter position he was on the road for three years.

ARE YOU THROWING STONES IN YOUR WELL?

By JOE OSIER

Many years ago, before the bobbed hair pestilence stalked into our midst and—

"Sweet Mamma—Papa's Getting Mad" became the national air,—

Some Sheik—I've quite forgotten his name and his racket—

Clambered down from his high powered nag and let go of this keen remark:

"Throw not a stone into a well from which thou drinkest."

And, because I know that there are many men in the electrical industry today who are spending a major portion of their time heaving stones and like litter into their own and others' wells—

I have determined to dedicate myself—

For the next few minutes—

To the abatement of this evil.

Therefore, in order that I may not appear prejudiced or unjust in my accusations—

Allow me to place on the stand the Chief Offender, John Goof—the man who raps the business—

His own and others'—

From the naughty word to breakfast—each and every day.

For let it be known that John is the Boy who shouts loud and lustily that—

"Business is rotten"—"The buying public are a bunch of boobs"—Manufacturers are brigands and the wholesalers are stick-up men and—

"Further and more" (as another famous humorist is reported to have said)—

That "any man who even contemplates engaging in the business should be given rapid transportation to the foolsh founndry."

And so John Goof raves on and some men—

Who should know better—

Listen—and others, who know more—

Laugh and remark from the corners of their mouths:

"Why think of thy virtues, O Onion, since every bite draws tears?"

But, seriously speaking—if one may be permitted to speak seriously in an alleged funny column—

The smart Men of the Electrical Industry—and their name is Legion—

Are not concerned over John Goof and his half-baked cohorts.

They are too busy learning, planning, expanding; bending their efforts to benefit the public generally and—

Themselves specifically—to take time out to listen to a man who knows no better than to hurl stones into his own well.

They know that John has refused to hear Opportunity's knock; that he has short changed himself; that he is paging the Sheriff and—

So they go on about their business leaving John Goof in the orchestra pit by himself—

Where he can play: Darlink, I yam growing old—and—

Over the Hills to the Poor House—to his—

Leaking heart's content.

Yea, verily, 'tis my pleasure, in this fearless column, to—

Lift up my voice and say that:

The day of the Calamity Howler and the Yawp artist, who have always cluttered up the Road of Progress—

Is fast finishing. They are being slain and their hides ornament the tumble-down shacks along the wayside.

Their day is about done—their song almost sung, and—

They have come to know that—

"At the narrow passage, there is no brother and no friend."



This brick and tile store front presents a pleasing picture to the eyes of the passers-by who are thus encouraged to enter the store and give the dealer an opportunity to interest them in the electrical equipment carried in stock. The window display is changed frequently and an effort is



made to carry an air of refinement by the use of a few appliances well arranged throughout the large window. The store is that of Hugh A. Wilson at 4318 University Way, Seattle, Wash. The firm has been in this location a little over a year.

INDUSTRIAL NEWS



Pit River Plant No. 1 Opened by P. G. & E. Co.

Three Construction Records Are Smashed When Plant and 220,000-volt Line Are Put in Operation

When electric lights glowed and an American flag was slowly pulled up the pole, by a motor to which the halyards were attached, the waiting crowd, at Vaca substation, realized that the Pit River No. 1 plant of the Pacific Gas & Electric Company had been completed and put in service and that electricity was officially being transmitted 202 miles at 220,000 volts for the first time. Just at 4:30 o'clock on Sept. 30, before an assemblage of about 200 bankers, business men and engineers, Miss Isabel Creed, daughter of Wigginton E. Creed, president of the company, closed the switch which started the water into the turbines which drive the two 35,000-kva. generators installed at the plant in Shasta county, Calif.

The opening ceremonies were under the direction of civic organizations of northern California and speeches were given at Pit No. 1 and Vaca substation, by leaders of these bodies, congratulating the Pacific Gas & Electric Company upon their enterprise. Wigginton E. Creed responded for the company at Pit No. 1 and John A. Britton, vice-president and general manager, spoke at Vaca substation.

The official opening of Pit No. 1

smashed three records in generation, transmission and transformation of electrical power. The two 35,000-kva. 60-cycle generators located in the new plant are the largest of their type in the world, while the 202-mile transmission line which is operating at 220,000 volts is carrying the highest voltage of any commercial line installed up to this time. The Vaca substation is the first to be constructed anywhere for 220,000-volt operation.

This plant is the first unit of a series of five to be constructed by the Pacific Gas & Electric Company on the Pit River, at a cost of \$100,000,000. The other four units are to be completed by 1935. The power generated at Pit No. 1 raises the installed capacity of the company's system to 595,000 hp. The cost of the Pit River development to date, including transmission lines, is approximately \$18,000,000.

That the Diamond Creek site on the Colorado River will be used for developing hydroelectric power is the opinion of Congressman Carl Hayden of Arizona. The proposed plan for development was worked out by James B. Girand.

Denver to Experiment with Gas as Home Heating Fuel

To make Denver "The Smokeless City of the World" is the plan of Henry L. Doherty, president of the Cities Service Company of Denver, Colo. Toward this end it is his plan to take 100 representative homes this winter, and supply them with gas as a heating fuel at a low rate, to determine if it is possible and practicable to heat Denver homes in this way. The Denver Gas & Electric Company, which is a subsidiary of the Cities company, expects to lose money on the gas sold to these homes during this winter, as gas consumption in the city is not large enough to get quantity low prices.

If the experiment proves that gas is a practical fuel for use in the cold weather that Denver is subjected to, arrangements to supply more homes next winter will be made. With this additional demand for gas it is Mr. Doherty's belief that gas can be supplied to the citizens of Denver at a cost below that of coal.

Point Grey B. C. Will Install Electric Light Plant

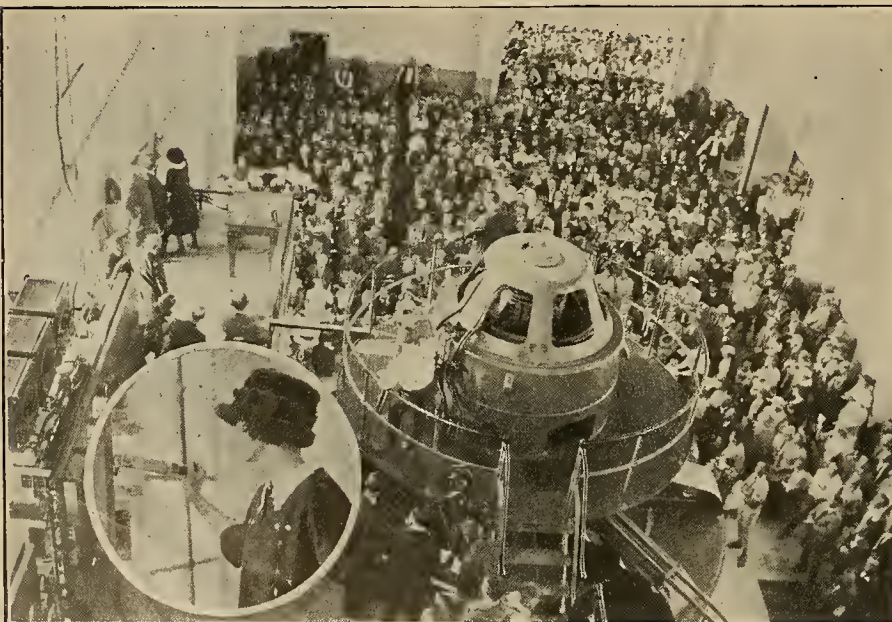
The municipal council of Point Grey, a suburb of Vancouver, B. C., passed a resolution recently, authorizing the solicitor of the municipality to prepare a money by-law to cover the cost of the erection of an electric generating and street lighting system, at an approximate cost of \$135,000.

The British Columbia Electric Railway Company offered to maintain the street lighting system at a flat rate of \$60 per lamp per year, but the council decided that municipal ownership of the plant will soon pay for the cost of installation, by the saving thus effected. Besides the street lighting, it is proposed to light all the municipal buildings from the new installation.

Turlock Advised to Distribute Own Electric Power

Members of the Turlock, Calif., chamber of commerce have advised the city to purchase the distribution lines within the city limits and to take charge of the distribution of power there. This action was taken after the irrigation district had brought condemnation proceedings against the Pacific Gas & Electric Company.

The board of directors of the Turlock Irrigation district has already been given a franchise to build power lines within the district. The franchise also permits the construction of equipment essential to the transmission of electrical energy.



Interior of the Pit River No. 1 power plant of the Pacific Gas & Electric Company, showing one of the turbine generators which was started when the water was released by the closing of a switch just after this picture was taken. Miss Isabel Creed, daughter of President Wigginton E. Creed, is seen in the insert in the act of closing the switch.

WINNERS OF "SERVICE" PHOTOGRAPH CONTEST

Out of the ninety-seven photographs received by the Contest Editor of the Journal of Electricity and Western Industry as entrants in the "Service" picture contest, 14 prize winners have been selected by Chester Rowell of the California Railroad Commission. Great interest was shown by a large number of men of the electrical industry and some excellent photographs were received.

All of the prize winning pictures appear in this issue. The first prize of \$20 was awarded to H. S. Furlong, assistant publicity manager of the Pacific Gas & Electric Company, San Francisco. The picture was entitled "Battling the Snows to Keep the Lights Burning" and appears on the lower center of page 274. "Heroism in the Line of Duty," a picture submitted by F. F. Barbour, assistant to the general manager of the Great Western Power Company, San Francisco, won the second prize of \$15. This picture appears in the center-left of page 275. W. H. Brown, statistician for the Southern Sierras Power Company, Riverside, Calif., was awarded the third prize of \$10, for the picture he submitted which appears on page 279 and was entitled "Service in the Face of Difficulties."

The eleven \$5 prizes were awarded to the following men: Fourth prize, "Back of the Service," by Sidney W. Green, San Joaquin Light & Power Corporation, Fresno, Calif., on page 272; fifth prize, "Lineman's Dangers," by W. G. Drew, California Oregon Power Company, Medford, Ore., on page 276 at upper-right; sixth prize,

"Patrolling the Lines in Winter," by W. R. Putnam, vice-president and general manager Idaho Power Company, Boise, Ida., on page 276 center-right; seventh prize, "Breaking the Trail to Make Repairs," from W. G. Drew, California Oregon Power Company, Medford, Ore., on upper-left of page 276; eighth prize, "One of the Courtesies of Service—Keeping the Power On for the New Tenant," by J. D. Scott, commercial engineer, Portland Railway Light & Power Company, Portland, upper-center page 275; ninth prize, "Repair Wagon and Tool Equipment," from F. F. Soder, Pacific Gas & Electric Company, Corning, Calif., center-left page 274; tenth prize, "Service Cars," J. D. Scott, commercial engineer, Portland Railway Light & Power Company, Portland, bottom of page 275; eleventh prize, "Service Telephones," from J. D. Scott, commercial engineer, Portland Railway Light & Power Company, Portland, center-right page 275; twelfth prize, "Bringing Electric Service to the Home," by Sidney W. Green, San Joaquin Light & Power Corporation, Fresno, Calif., center-right page 274; thirteenth prize, "Carrying Cement by Pack Train for the Rush Meadow Dam," from E. M. Dighton, traveling auditor, Southern Sierras Power Company, Riverside, Calif., upper-left page 275; fourteenth prize, "Delivering Ranges by Hand," from J. D. Scott, commercial engineer, Portland Railway Light & Power Company, Portland, upper-right page 275.

Checks have been mailed to the winners of the contest.

Employees to Receive Benefits of Group Insurance

Announcement has just been made by John A. Roebling's Sons Company, Trenton, New Jersey, to the effect that all employees, who have been with them a year or longer, on Sept. 1, 1922, will be protected by group life insurance and pension plans. By arrangements made with The Equitable Life Assurance Society of the United States, the insurance went into force automatically on midnight of August 31.

The insurance is graded according to length of service, all employees more than one year and less than two years with the company to receive \$500, increasing \$100 each additional year of service until the maximum of \$1,500 is reached for eleven years of service and over.

A pension plan is also provided which allows for the retirement of males at the age of 60 yr. and females at the age of 55 yr. Pensions will range from \$25 to \$250.

Lake Quinault Timber to be Sold To Highest Bidder Nov. 1

A block of timber situated near Lake Quinault, in Grays Harbor county, Wash., and owned by the Quinault Indian Reservation, embracing 388,000,000 ft., to be known as the Lake Quinault Logging Unit, will be offered for sale by the Department of Indian Affairs November 1. Bids will be received by Supt. W. B. Sams of the Reservation at Taholah, Wash. The bid call specifies that a check for \$20,000 must be submitted with each proposal to purchase, and the successful bidder must thereafter furnish a bond of \$50,000.

Ten million feet of timber must be removed from the sale area prior to April 1, 1927, and at least 25,000,000 ft. each year thereafter until the contract expires on April 1, 1942. This is the third largest unit of the Quinault Reservation timber offered for sale.

Utah Rivers Investigated By Reclamation Engineers

W. M. Green, engineer in charge of investigations in Utah for the United States Reclamation Service, has returned from the Dead Man's Bench project on the lower White River. R. R. Robertson, engineer, and party have completed a rough investigation of the area of irrigable lands under the proposed project, of which the feasibility is being determined. About six weeks more will be required to run a survey back to the White River to determine where diversion works might be constructed.

W. L. Drager, assistant engineer for the reclamation service, is at the head of a party which is running a "fly-line" from the end of the canal at Magna, Utah, into Tooele county, in connection with the investigation of the Provo river system end of the Provo-Weber project. This work is also under the direction of Mr. Green, who is in charge under a cooperative agreement between the state and the government. This agreement has for its aim the determination of the feasibility of various proposed irrigation projects in Utah,

with the idea in view that the reclamation service may undertake additional projects.

Will Make Improvements to Oregon Power Plants

The Yamhill Electric Company, Newberg, Ore., has acquired through purchase, the lighting plants at Willamina, Amity and Sheridan, Ore. Improvements are now being made in these plants and pole lines will soon have them connected up with the main network.

About 13 miles of 11,000-volt line will be built and 5 miles of old line will be rebuilt. This will add 150 to 200 kw. demand to the Yamhill company's lines and will insure a more satisfactory service.

The Rockton Lumber Company has recently filed articles of incorporation with the corporation commissioner. This company has been formed to engage in timber, logging and sawmill business on a capital of \$50,000. The papers were filed by J. Bowerman, Yeon Building, Portland.

Fresno Power Company to Erect Ten Story Building

Construction of a 10-story office building in Fresno, Calif., to cost approximately \$600,000, for the San Joaquin Light & Power Corporation, has been started and the work will be speeded along in order that all of the offices of the company may be housed in one building as soon as possible. At present these offices are situated in a number of buildings around the town and a lack of efficiency results.

This building will be Fresno's tallest and according to specifications it will be the most brilliantly illuminated in the Southwest. Flood lights, in colors, will be used to produce a spectacular appearance at night and it is believed that the building will be seen many miles from Fresno. A large electric sign will be placed upon the roof of the structure when completed.

The lease and operation of the electric light and power plant of White Sulphur Springs, Mont., have been taken over by T. T. McArthur, who has had charge of the plant for the last two years. T. J. Twohy owned the lease up to the present time.

Events in Washington of Interest to Western Men

A Survey of Recent Developments in the Nation's Capital by
Paul Wooton, Special Correspondent of the Journal
of Electricity and Western Industry

The fear being expressed in sundry quarters that there will be over expansion of hydroelectric development in certain regions of the West does not alarm Col. William Kelly, chief engineer of the Federal Power Commission, who has just made an extensive survey of the situation on the principal power-producing streams on the Pacific Coast. The fact that the development is in advance of immediate needs makes for cheap power, he points out. This tends to attract industries. The demand in the East that public utilities be given the first call on hydroelectric power will be the cause of increasing concern on the part of industrial consumers of power and Col. Kelly expresses the opinion that a very large number of such concerns may well enter upon studies as to whether or not it would be to their advantage to undertake operations in a region where cheap power now is available and where almost unlimited quantities of additional power can be made available as rapidly as it is needed. He realizes that the distance of western power from some markets offers an obstacle which cannot be overcome in all cases but those industries in which power is a relatively large factor should be considering, he says, whether or not the western situation cannot be turned to their advantage. Col. Kelly does not expect to see any exodus of eastern industries to the West, but he does believe there will be an increasing transition as power costs in the East increase.

The success of the Southern California Edison's financing indicates to Col. Kelly that public sentiment among the people of the West is overwhelmingly in favor of the maximum utilization of the great power resources of that region which have been allowed to remain dormant so long.

Col. Kelly pointed out that an important factor in stimulating water power development in the West was the high price and scarcity of fuel oil at about the time the Water Power Act was passed. Since that time the fuel-oil situation has become more satisfactory and many of the plants which expected to be forced to use other power have been able to continue the use of their oil-burning equipment. Since there is no certainty as to the length of time that fuel-oil will be available at present prices, Col. Kelly observed a general uneasiness on the part of the industries using that fuel for power purposes. As a result he believes there will be a gradual turning to hydroelectric power on the part of existing industries.

The Department of the Interior has decided to call for bids in the near future for the royalty oil accruing to the Government in the Salt Creek and Cat Creek fields in Wyoming and Montana respectively. This oil heretofore has been sold to the Shipping Board, but on the expiration of the present contract, competitive bids will be sought.

At present the royalty oil in the Salt Creek field amounts to 8,200 bbl. per day. In the Cat Creek field it is averaging 500 bbl. per day. Since these are high-grade, paraffin base oils, and since it is believed that the production in each of these fields will increase, and since the contracts are to be for five and ten-year periods, the amount of oil involved is large.

The long standing controversy over the accounting regulation, which eventually is to be promulgated in connection with the administration of the Water Power Act, bids fair to be settled as a result of extended conferences in Washington in which officers of the Federal Power Commission, representatives of the National Electric Light Association, representatives of the National Association of Railway and Utilities Commissioners and a number of the officers of electric light and power companies have taken part. These around-the-table conferences are expected to result in substantial uniformity in the accounting system for the use of licensees under the Water Power Act, and for promulgation by the regulatory bodies of the several states.

During the conference the chief accountant for the Federal Power Commission agreed to make a number of changes and modifications in the revised tentative draft of the proposed accounting system, which formed the basis for discussion at the conference. The representatives of the National Association of Railway and Utilities Commissioners agreed on their part to recommend important changes in and modifications of the proposed uniform system of accounts for electric utilities adopted by the Association at its 1920 convention. The chief accountant of the Federal Commission will lay the following recommendations before the Commission:

"With the understanding that the accounting committee of the National Association of Railway and Utilities Commissioners will recommend to the association for adoption certain corrections, changes and amendments conditionally agreed to, the chief accountant of the Federal Power Commission is willing to lay the following recommendations before the Commission:

"(1). To insert in the revised tentative draft a clause to the general effect that the functional classification of non-project land and structures will not be required but that if the licensee so desires all non-project land may be included in a single land account, and that all non-project structures may be included in a single structure account. So far as non-project land and structures are concerned the accounting is to be optional. As to project land and structures, he is willing to insert a clause to the general effect that where, in case of peculiar conditions, it seems impracticable to classify project lands and structures according to the prescribed accounts that licensees may bring the matter to the attention of the Federal Power Commission and that consideration will be given to permitting a special classification.

"(2). To create another general group of fixed capital accounts for certain transmission and distribution fixed capital in which to include the cost of capital used jointly for transmission and distribution purposes where it is impracticable or undesirable to assign or allocate such costs to other specific transmission or distribution fixed capital account.

"(3). To make such other and further changes in and correction and modification of the other fixed capital accounts and the general instructions relating thereto as were agreed to by the conference.

"(4). To change the title and text of certain balance sheet accounts which are now in both drafts, to agree with the title and text of the national committee's draft where the language used by the national committee clearly expresses the meaning intended to be conveyed and further to make such changes in the balance sheet account as were agreed to in conference. Unfinished construction is to be retained as a balance sheet account and is not to be included among fixed capital accounts.

"(5). To make such changes in the general rule or in any other rules or accounts which may be necessary to make it clear that nothing in the system of accounts for licensees is intended to relieve the licensees, which are public utilities, from conforming to all accounting rules prescribed by the state commission, including such rules which may be applicable to the project property or any other rule or regulation of the state regulatory body.

"(6). To carry out in good faith all promises made during the conference as to changes in accounts and rules not specifically referred to and to consider carefully the matters discussed concerning which no definite conclusion was reached or promise made.

"(7). It is not proposed to depart materially from the general plan and general arrangement of the accounts as at present set forth in the revised tentative draft and only to make such modifications of and changes in the accounts themselves as already have been indicated, preserving the general plan and arrangement in all material aspects."

Logan, Utah, Applies for Water for Power Generation

An application by the city of Logan, Utah, for 125 sec.-ft. of water to be taken from the Logan River below the state dam, has been filed with the state engineer of Utah. The proposal of the city commission of Logan is to convey this water by a pipe line to the site of the old Deseret mill two blocks east of the main business block, where the city may erect a new electric power plant.

The report of the engineer shows that a fall of 106 ft. can be secured which will develop 550 hp. at the lowest stage of the river while 1,200 hp. can be generated with the river at its highest recorded stage. Lengthy transmission lines will be unnecessary as the plant will be located in the center of the city.

If this plant is installed it will be able to supply the entire needs of the city, and will supplant the power taken from the Utah Power & Light Company. This company supplies 56 per cent of the power used at present.

Reconstruction Plan Undertaken By San Diego Railway

Reconstruction plans for the San Diego Electric Railway company of San Diego, Calif., call for an expenditure of approximately \$1,000,000, according to statements issued by officials of the company. The improvements recommended by the state railroad commission and the city transportation committee are included in this plan.

Since March of this year \$400,000 has already been spent and the cost of jobs for which materials are already purchased will be about \$700,000. These figures do not include the cost of work planned but for which the materials have not yet been ordered. Expenditures for rolling stock, machine shops, or work not of a reconstructive nature have not been estimated by the company.

This program of reconstruction has all occurred since Claus Spreckels has taken charge as general manager.

Water Power Subject of Engineers' Discussion

Six Hundred Members Attend Fall Meeting of American Society of Civil Engineers Held in San Francisco

Water power and its attending engineering problems was the principal subject taken up at the fall session of the American Society of Civil Engineers held at San Francisco Oct. 4-8. Over 600 members were registered in attendance at the convention, which, according to John R. Freeman, president of the society, was the best and the one at which the most beneficial comment was presented, that the society has held.

President John R. Freeman opened the meeting Wednesday morning with a comparison of modern hydroelectric practice with that of early developments, as he saw it exemplified a few days before at the opening of the Pit River plant of the Pacific Gas & Electric Company, in northern California. He brought out the fact that here in a modern hydroelectric development one of the 40,000-hp. Pit River units develops more power than the combined output of the 150 installations in the vicinity of Lowell and Lawrence, Mass., when he began his water power work, only fifty years ago. In an illustrated talk on the Columbia River development, A. P. Davis, director, U. S. Reclamation Service, Washington, D. C., stated that it can be made to develop 6,000,000-hp., and irrigate 6,000,000 acres and because it is navigable for over 400 miles, it involves international rights. The complete and efficient use of the river for power, the speaker emphasized, requires large storage, though in his opinion the most important and far most urgent need of storage is the control of the destructive floods over the lower valleys by the river every year. J. B. Lippincott, of Los Angeles, in discussing Mr. Davis' paper, said that the entire summer flow of the Colorado is now being diverted and that the time has already come when the storage of flood waters must be begun, and expressed a hope that the U. S. Reclamation Service would be able, with federal aid, to undertake the development of storage and power on the Colorado, but if that could not be done soon, that federal authorities would at least allow private enterprises who stood ready, to undertake such development.

O. C. Merrill, executive secretary of the Federal Water Power Commission, stated that there is now more water power development under construction than at any previous time in the history of the country.

F. H. Fowler, district engineer, U. S. Forest Service, San Francisco, in his paper on "Water Power Potentialities of the Pacific Coast," showed that practically all the western coast is within a 500-mile radius of the two great sources of power on the Colorado and Columbia rivers. The enormous power possibilities here, however, cannot be developed economically, except in large blocks and consequently markets for the power must be found before development will be feasible. West of the Rockies coal and gas can compete with hydroelectric power only in very small areas or under special conditions, and in the long run oil cannot be a com-

petitor of hydroelectric power. The entire western region, he said, could be supplied from developments on the Colorado and Columbia rivers, if the transmission of this power could be successfully accomplished over distances of 500 miles.

John D. Galloway, consulting engineer of San Francisco, presented a paper on "Hydroelectric Developments on the Pacific Coast." He discussed the necessity for avoiding conflict of irrigation and power interests in water storage. The requirements of irrigation are best served by water stored until the dry season, in low level reservoirs that can be supplied from the entire watershed, whereas power uses are best served by continuous flow from reservoirs in the upper part of the basin where a maximum of head may be developed. Power demand in California has been increasing three to four times as fast as the population. The use of water power has increased there 138 per cent in nine years, or at the rate of approximately 9.9 per cent compounded annually. Adding steam power, the rate becomes 11.1 per cent compounded annually. By 1930 he estimates that the annual energy output will exceed 10,000,000,000 kw-hr.

F. W. Peek, Jr., consulting engineer, General Electric Company, Pittsfield, in his paper on "High Voltage Power Transmission," showed that the ultimate voltage of transmission lines would not be limited by engineering difficulties, but rather by sources and markets for power. In his opinion it will be necessary to have a minimum of 100,000 kw. of power per circuit to be transmitted before 1,000,000-volt transmission will be economically feasible, as the cost of very high voltage lines is such that they can be built only when great amounts of power are to be transmitted. A 1,000,000-volt transmission line, for example, should have tubular conductors 6 in. in diameter, spaced 30 ft. apart on 20-ft. insulators, on towers probably about 200 ft. high. Prof. Harris J. Ryan, Stanford University, presented a paper on "High Voltage Phenomena Encountered in Power Transmission." He agreed with Peek that 100,000 kw. per circuit is the minimum power that can be economically transmitted at 1,000,000 volts. Pictures were presented showing experiments with high voltage in his laboratory at Stanford University.

H. W. Dennis, consulting engineer, Southern California Edison Company, co-author with H. A. Barre, executive engineer, Southern California Edison Company, of a paper entitled "Growth of the Use of Electric Power in Southern California and Probabilities of Its Future Growth with Reference to Sources of Hydraulic Power," said that in the territory served by the Southern California Edison Company the population increased over 300 per cent between 1910 and 1920 and that during that time the company increased its output from 379,900,000 kw-hr., in 1910, to 1,079,000,000 kw-hr. in 1920. Some 550,000 acres of land are irrigated

by water pumped with power supplied by his company. An acre of arid land uses 300 kw-hr. yearly, has its sale value increased thereby from \$30 an acre to \$225 an acre, and yields an annual return of from \$50 to \$100 an acre in crops. The increase of electric power production in the territory served by this company has been compounded at the rate of 10 per cent per annum. Anticipating a steady increase in power demands for many years to come, a very extensive development program has been laid out. During the next six years 322,000 hp. will be developed and a distribution system provided at a total cost of about \$125,000,000. This year, \$27,000,000 is being expended by the company for water power plants and additional distribution facilities. The conclusions only were read from the paper presented by C. F. Loweth, chief engineer, Chicago, Milwaukee and St. Paul Railway, on "Hydroelectric Power Development as Related to Electrification of Railroads." These were: That it is reasonably safe to assume that hydroelectric power will be a large factor in steam railway electrification under the following conditions: "(A) When it is available over such an extended area as will include a large main track mileage for the individual railroad under consideration, (B) when the several sources are tied together so as to insure reliability, (C) when it can be contracted for extending over long periods, (D) when its cost reduced to terms of locomotive tractive effort is cheaper than that of steam generated power."

Following the Thursday evening meeting the delegates went by train to inspect the Hetch Hetchy, combined municipal water supply and hydroelectric project of the city of San Francisco. Here an opportunity was afforded to study in detail a typical western development of large proportions. In the present stage of construction, work is under way on a concrete and earth dam, an 18-mile tunnel, forebay, penstock, power house and other construction work incidental to a combined water and power development served by its own 68-mile railroad.

Utah Power Company Is Granted Development Permit

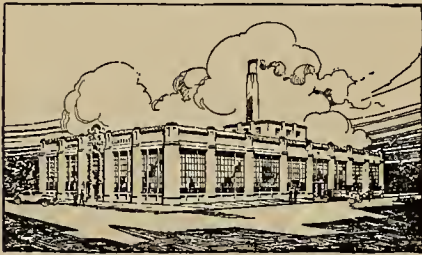
The Utah Power & Light Company, Salt Lake City, Utah, has been granted a license, by the Federal Power Commission, for its Soda site on Bear River, which is located a few miles above the existing Grace plant of the company. A preliminary permit for this site and three other sites on the river was granted to the company on July 19, 1921.

The market for power in Utah has grown so rapidly during the past two years that the company finds it necessary to provide more generating capacity at once. A concrete dam approximately 250 ft. long will be built in Bear River and two hydroelectric generating units of 10,500-hp. capacity each will be installed in the power house, which will be built as an integral part of the dam. The turbines will operate under a head of about 80 ft. The plant will be connected by a 130,000-volt transmission line with the existing transmission system of the company.

Cotton Cordage Mill to Be Built in California

To supply cordage for the insulation of the wire products of the California Wire Company of Orange, Calif., a new industrial organization to be known as the California Cordage Company has been formed by men of that city. The new company's product will be used entirely by the wire company which is closely affiliated with the new cotton-spinning mill.

The building of a structure to be 80 x 150 ft. with an ornate exterior of tile or stucco will be started in the near future. This mill will be situated across the street from the new wire mill of the California Wire Company to facilitate the transportation of the cotton insulating material to the consuming company. The cotton mill will use the cotton waste from the Imperial Cotton Mills of Los Angeles for some of the insulating material to be produced. In addition to the insulating



Architect's drawing of the building to be erected at Orange, Calif., for the California Cotton Cordage Company. Cotton insulating material will be manufactured here for the California Wire Company.

yarns the cotton mill will also manufacture wrapping and sewing twine and cotton rope.

Contracts now held by the California Wire Company will call for a large production of the insulating yarn from the new cotton-spinning mill as it has orders which call for delivery of a carload of finished cables every day. This will require the wire company to run a full shift of workers both day and night.

At present the copper wire, rods and cables are all made in the Anaconda Copper Company's works at Great Falls, Mont. According to the president of the wire company a smelter and wire drawing mill is needed in the vicinity of Los Angeles, to secure the best development of the industry.

The Reedsport Light and Power Company's plant, at Reedsport, Ore., was sold, quite recently and it is expected that all of the equipment that can be used will be put into active operation within the next 60 days, reasonably insuring lights for this fall and winter. Plans for an extension of wires and equipment to fit the whole city are in progress.

The first unit of the Skagit River power development, for the city of Seattle's municipal power program, will be completed by December, 1923, according to the chief engineer, Carl E. F. Uhden. The Skagit River development is to be in two units; the higher one will be the Ruby plant at an elevation of 1,600 ft. and the lower, or Gorge plant, 800 ft. lower.

Railroad Commission Approval Given to Land Deeds

Approval of the California State Railroad Commission of several deeds between the Mount Shasta Power Corporation and the Red River Lumber Company was recently granted. By the conditions of the deeds the Red River Lumber Company is to receive from the power corporation lands and rights along Hat Creek, in addition to two power plants of 25,000-kva. installed capacity. In return the power company is to receive the right to survey at any time within the next five years any lands now owned or hereafter acquired by the lumber company and to choose any lands or rights necessary to the construction and operation of its power plants and transmission lines.

The Red River Lumber Company agrees to lease the two power plants to the power company and to accept as rental, specified amounts of electric power not to exceed 9,500 hp. At the conclusion of the lease the lumber company agrees to pay the Mount Shasta Power Corporation the actual cost of acquiring the lands and in addition the reasonable value of the power plants less \$500,000.

University of New Mexico Will Have Illuminated "U"

A large electric sign, forming the letter U, will be the property of the University of Mexico in the near future. The sign will be placed upon the roof of the highest building on the university campus and persons within a radius of 10 miles will be able to see it at night.

The sign was made possible by the gifts of citizens of Albuquerque, N. M. Arthur Prager of the Gas and Electric Company and Dr. N. K. Wylder were the leaders in the movement to secure the sign.

Engineer Recommends Enlarging of Morena Spillway

That the spillway of the Morena dam of the city of San Diego should be enlarged, is the opinion of J. B. Lippincott, consulting engineer of Los Angeles. According to his report the present spillway is unsafe as the dam is of a rock fill type, and he recommends a spillway of 285-ft. length.

If this construction is made it will be sufficient to withstand a flood equal to 150 per cent of that of 1916, leaving a free board above the maximum water level in the reservoir to the top of the dam of 3.3 ft.

A recent tour of investigation by Roy L. Carberry, chief engineer and general manager of the Imperial Irrigation District, showed that the Pescadero Dam and cut have actually diverted the Colorado River overflow entirely away from the Imperial Valley. A channel is rapidly forming and lowering itself into the ground. The overflow at 5 miles below the dam is in a direction opposite to that of Volcano Lake, showing that the general course is away from and not toward the Imperial Valley. There is evidence, too, that the Volcano Lake country can drain off and become absolutely dry.

Books and Bulletins

STANDARD HANDBOOK FOR ELECTRICAL ENGINEERS

FRANK F. FOWLE, editor-in-chief.
Fifth edition, 25 thumb-indexed sections.
4 by 7 in. 2,139 pages. Illustrated. \$6.
McGraw-Hill Book Co., Inc., New York.

Last revised in 1915, the new edition of the Standard Handbook has been fully reviewed by its editors, to include all of the developments in electrical engineering practice which have been evolved during the period of industrial activity brought about by the war. Many of the sections have been entirely rewritten and all have been brought up to date. One of the chief features of the new edition is the enlarging of the index to the point where that section is more comprehensive and the contents of the book more accessible. With its many additions and revisions, the book surpasses the high standards which it has set in the past as an indispensable reference work for engineers.

HOW TO RETAIL RADIO

By the Editors of Electrical Merchandising. 5½ by 8 in. 226 pages. Illustrated. \$2. McGraw-Hill Book Co., Inc., New York.

The almost over-night growth in the popularity of radio has opened a new field of profit for the dealer, whether he deal in radio material alone or whether he has installed a radio department in his store. Many dealers have been attracted to the field who will not survive. This book has been designed to help the merchant who feels that radio has come to stay. Every conceivable angle of merchandising practice which will enable a dealer to conduct a successful radio business has been considered in some one of the chapters. The subjects covered include financing, store location, equipment and store arrangement, getting customers, advertising, displaying goods, training salesmen, demonstrations, installation and servicing, business records, overhead and many other pertinent ideas. The book should prove of exceptional value to the dealer who is contemplating the installation of a radio department or to the one who would see his radio department grow.

NEW ELECTRIC HANDBOOK

The Electric Power Club, Cleveland, has issued a new edition of its handbook, covering substantially all the standardization it has effected in the electric motors, motor pulleys, generators, transformers, electric tools, mining and industrial locomotives, control equipment, power switchboards and switching equipment manufactured in this country.

The Hydraulic Society has gotten out a second edition of its pamphlet entitled "Trade Standards in the Pump Industry." This edition contains some additional tables and explanatory data, and also a revised list of members of the Society. Copies may be secured from the members or the secretary, C. H. Rohrbach, 50 Church Street, New York.

MEETINGS

Development Society Fosters Successful Conference

Called by the Society for Electrical Development, Inc., the conference of local Electrical Leagues recently held at Association Island, N. Y., was a great success and much good was derived by the men of the electrical industry who attended. Over 120 delegates were present representing about thirty leagues and over forty cities. The Joint Committee for Business Development worked in conjunction with the Society in arranging the meeting, which laid plans for carrying out the valued work of the local leagues and of establishing these leagues in still other localities.

This is the second cooperation meeting of electrical men at the island, the first being held in 1913 when the Society for Electrical Development was formed. At that convention, however, only executives were present, while this last one was attended by men of the industry who were actually doing the electrical work throughout the country.

The meeting was conducted upon open forum lines, no prearranged schedule being worked out. Discussion was fostered and nearly every man present had some idea to present to the conference.

The following resolution was proposed and unanimously adopted by the conference:

Whereas: The Society for Electrical Development, finding the need of a medium through which, by spoken word, messages of moment to the industry, may be quickly transmitted to substantial groups of men in the larger centers of population and through them to the smaller communities; and

Whereas: The lack of such a medium at this time in promoting the work of the Joint Committee for Business Development, to which the Society for Electrical Development has pledged its support, is particularly evident; and

Whereas: While Electrical Leagues and Clubs have existed for some time in certain cities of the country, their efforts have never been coordinated or influence used in support of matters of national significance to the industry, and that this is the first meeting of representatives of leagues and clubs ever held; and

Whereas: Out of the interchange of ideas and experiences made possible by this gathering, we have gained knowledge as to our limitations as well as opportunities for greater service; We

First: Congratulate the Society for Electrical Development on its foresight in calling together for conference and exchange of experiences, representatives of Electrical Leagues and Clubs throughout the country;

Second: While recognizing the limitations of the leagues and clubs for all purposes, that for the purpose in mind no better medium has yet

been created or is contemplated and therefore these should be used;

Third: That leagues should be established and their work fostered in every community large enough to support one;

Fourth: That for this purpose organized effort is needed and should be supplied by the Society for Electrical Development;

Fifth: That the Society for Electrical Development use its best efforts in directing the attention and securing the support of leading men in all branches of the industry in establishing these leagues;

Sixth: We pledge our support, first: in strengthening and broadening the usefulness of the leagues we represent; second, in helping to establish similar leagues in other cities; third, in giving hearty and continued support to the Joint Committee for Business Development.

British Columbia to Have New Pulp and Paper Mill

Work is starting immediately on a large pulp and paper mill for the Wigwam Pulp and Paper Company at Phillips Bridge, nine miles south of Elko in the East Kootenay district, British Columbia. The first unit is costing \$3,500,000 and will have a capacity of 100 tons of paper a day. Ultimately the plant will represent an expenditure of \$10,000,000 and employ 1,500 men.

The contract for the construction work has been let to McDougall & McNeill, Limited, of Vancouver. C. D. McNab, Waldo, B. C., of the Baker Lumber Company, has obtained the contract for supplying the pulpwood of which there is said to be a supply sufficient for 30 years.

The Wigwam Pulp and Paper Company represents both Canadian and American capital. Among the American newspapers interested are the Chicago Tribune and the New York Daily News. Electric power generated in the vicinity will be used.

Sperry Flour Company Acquires Large Portland Mill

Operation of the \$10,000,000 property of the Portland Flouring Mills Company has been taken over by the Sperry Flour Company and formal announcement of the transfer of the property is expected to follow within a few days.

This is the largest transaction in the history of the flour mill business on the Pacific Coast. This means the combination of two of the largest milling companies west of the Mississippi River with combined assets in excess of \$30,000,000, and a combined milling capacity of 27,000 bbl. of flour per day.

Commission Grants Permit For Power Development

Permits covering two power developments in California have recently been granted by the Federal Power Commission of Washington, D. C. The California Oregon Power Company was granted a preliminary permit for a project on the Klamath River near the northern border of the state which is planned to develop 120,000 hp. Since this project will utilize water from the same sources as certain irrigation projects the commission has reserved the right to impose "whatever restriction on diversion of water as may be in the public interest."

The commission has also authorized the Little Rock Power & Water Company to proceed with its development of Little Rock creek in southern California. This project will produce 2,300 hp.

Permits covering extension projects in Alaska were also granted. The companies receiving the permits are the Sawtooth Power Company on the Kruzgamepa River, and the Willow Creek Mines on Craigie creek.

Associated Contractors to Hold Convention in Los Angeles

The next national convention of the Associated General Contractors of America is coming to Los Angeles. A referendum to the members disclosed an overwhelming sentiment in favor of the Pacific Coast city. What was apparently the only obstacle was an insistence that all the delegates and the convention should be housed in the same hotel. Due to the persistence and activity of Brook Hawkins, this obstacle was removed by an offer from the management of the Clark Hotel to reserve rooms for 400 and provide an assembly hall and committee rooms. President Arthur S. Bent of the national association believes the bringing of a convention to the Pacific Coast will be of incalculable benefit to the organization as it will permanently nationalize it in the minds of the members and the public.

News of the definite selection of Los Angeles as the convention city came in a recent telegram to President Bent. The convention will be held about the third week in January.

Clackamas River Project Will Be Started Immediately

Work on the new \$6,000,000 hydroelectric project of the Portland Railway Light & Power Co., the contract for which was recently awarded to the Hurley-Mason Co. of Portland, will be begun immediately, according to G. C. Mason, vice-president of the company.

The dam will be on the Oak Grove branch of the Clackamas River, 30 mi. beyond Cazadero, where the company's present dam is located. The dam will be of concrete and will probably be of the gravity type. The new plant is expected to be in operation by July, 1924.

The saxophone band of the Denver Gas & Electric Light Co., which made its debut to the public during the recent music festival in Denver, has broadened its activities and is providing musical programs at the various city parks on Sunday afternoons.

COMING EVENTS

COLORADO RIVER COMMISSION

Special Meeting—Santa Fe, N. M.—Nov. 9, 1922

NATIONAL ASSOCIATION OF RAILWAY AND UTILITY COMMISSIONERS

Annual Convention—Detroit, Mich.—Nov. 14, 1922

ELECTRICAL SUPPLY JOBBERS' ASSOCIATION

Annual Convention—Cleveland, Ohio—Nov. 20-24, 1922

John H. Anderton, of the firm of Thebo, Starr and Anderton, consulting engineers of San Francisco, has recently returned from Japan, where he has spent several years in supervising hydroelectric development on the Kiso Gawa River in the heart of the Japanese Alps for the Daido Electric Company. Mr. Anderton recently gave a



JOHN H. ANDERTON

talk on hydroelectric development in Japan before the San Francisco Electrical Development League in which he told of the unique methods employed in that country. He pointed out that storage reservoirs are impossible because of the heavy floods and the debris which is carried by the Japanese rivers. Mr. Anderton was formerly chief electrical engineer for the Stone & Webster interests and as such was prominently identified with the Caribou development of the Great Western Power Company. During the war he was engineer in charge of electric welding at the Hog Island shipyards in Pennsylvania.

R. H. Manahan, city electrician of Los Angeles, has recently returned from the national convention of city electricians held at New Bedford, Mass. During his absence, Mr. Manahan visited New York, Cleveland, Chicago, Buffalo, Boston, and other large cities investigating fire alarm and street lighting conditions.

Henry Bostwick, San Francisco manager of the Pacific Gas & Electric Company, and well known to members of the electrical industry throughout the West, has just completed a most successful convention of the Pacific Coast Gas Association at Santa Barbara, over whose sessions he presided as president.

W. A. Brackenridge, senior vice-president of the Southern California Edison Company of Los Angeles, is a recent San Francisco visitor.

C. E. Skinner, assistant director of engineering, Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa., is spending a few weeks in Los Angeles and southern California looking over the field in the interests of the engineering department of his company. Mr. Skinner came to California from the Pacific Northwest where he delivered several lectures before electrical organizations in that vicinity.

Personals

A. E. Baron, formerly assistant to the comptroller, San Joaquin Light & Power Corporation, is now connected with the Southern California Edison Company's stock sales department. Mr. Baron has just been made chairman of the program and entertainment committee of the Los Angeles Electric Club, succeeding H. W. Allen, resigned.

Ralf R. Woolley, hydraulic engineer of the United States Geological Survey with offices in Salt Lake City, has returned after several weeks spent in surveying the Green River between the cities of Green River, Wyo., and Green River, Utah. He was accompanied by K. W. Trimble, topographical engineer of the geological survey, J. B. Rewside, geologist, and H. L. Stoner of the Utah Power & Light Company. The party traveled down the river a distance of 400 miles.

E. H. Eardley, of the Eardley Electric Company of Salt Lake City, chairman of the contractor-dealers' association of that city and chairman of the Engineers' Committee of the National Association of Electrical Contractors and Dealers, gave a paper on "Specific Specifications" before the recent convention of that organization at Cincinnati.

H. H. Walker, president of the Electrical Contractors and Dealers' Association of Los Angeles, and one of the leading electrical contractors of southern California, has just been appointed representative on the Advisory Committee of the California Electrical Co-operative Campaign by the Southern District, California State Association of Electrical Contractors and Dealers.

W. R. B. Wilcox, for 16 years practicing architect in Seattle, has accepted the appointment of professor of architecture at the University of Oregon at Eugene. Mr. Wilcox has been vice-president of the American Institute of Architects, and served on many architectural juries, as well as being a member of the city plan commission of Seattle.

Richard L. Humphreys, civil engineer of Philadelphia, one of those attending the recent convention of the American Society of Civil Engineers in San Francisco, has declared that California will be the scene of the highest development of hydroelectric power in the world during the next decade. Mr. Humphreys made the statement after visiting some of the existing developments.

W. P. L'Hommedieu has been made manager of the newly formed central station division of the Westinghouse Electric & Manufacturing Company's San Francisco office. The railway division at that office has been changed to the transportation division and E. A. Palmer appointed as manager. H. L. Garbutt has been made manager of the newly organized merchandising division.

Theodore Varney, electrical engineer of Pittsburgh, Pa., recently completed an extensive inspection of some of the important hydroelectric developments of California.

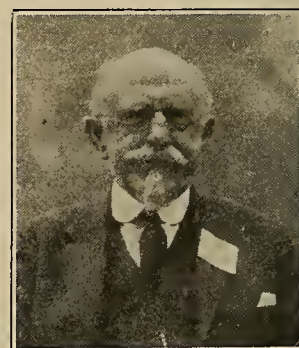
G. W. DeSelle recently arrived in Portland from Pittsburg, Penn. He will be attached to the sales force of the Portland office of the Westinghouse Electric & Manufacturing Company, spending most of his time for the present in the city and immediate vicinity. W. S. Boutwell has been transferred from the Seattle to the Portland district where he will be the service department representative, covering the state of Oregon.

K. E. Van Kuran, Los Angeles district manager of the Westinghouse Electric & Manufacturing Company, has just recently left Chicago to attend the American Electric Railway Association's convention. From there, Mr. Van Kuran will proceed to the works of the Westinghouse Company at East Pittsburgh, before returning to Los Angeles.

H. C. Spoden, formerly of Chicago, and more recently with Electric Lighting Supply Company and Pacific States Electric Company of Los Angeles, is now assisting E. P. Markee, district manager of the Edison Lamp Works of the General Electric Company.

C. P. Soderberg, formerly with the Cleveland Wire and Cable Company of Cleveland, Ohio, is now connected with the Westinghouse Electric & Manufacturing Company's Los Angeles office as assistant specialist on safety switches and illuminating equipment.

John R. Freeman, noted civil engineer of Providence, R. I., well known in the West for his work in connection with many irrigation, water and power projects, presided over the recent meeting of the American Society of Civil Engineers in San Francisco, at which water power and water power development were the chief topics of discussion. Mr. Freeman was the engineer who visualized the Hetch Hetchy system of the city of San Francisco, now under construction. He was also identified



JOHN R. FREEMAN

with the Great Western Power Company's Feather River developments and some of the projects of the Pacific Gas & Electric Company. During the war he was a member of the advisory committee on aeronautics. Recently he completed a commission for the Chinese government relative to the rehabilitation of the Grand canal and the control of the waters of the Yellow River.

Frank E. Webb, construction engineer of New York, is making a study of the problem of bridging San Francisco Bay. He is representing a number of eastern engineers and capitalists in proposing to erect a toll bridge across the lower portion of the bay.

C. Opitz, formerly district agent for the Puget Sound Power and Light Company at Benton, Wash., has resigned to become district agent for the Olympic Power Company at Port Angeles, Wash. L. P. Heath has been appointed to the vacancy at Renton.

C. L. Hill is succeeded by Ben F. Dupuy, as city engineer of Glendale. Mr. Hill resigned last week to engage in private engineering practice and refused to reconsider his decision after being offered a substantial increase in salary by the Glendale city council, which joined with City Manager Reeves in paying tribute to Mr. Hill's services to that city. Mr. Dupuy has been city engineer at Fullerton, prior to which he was city engineer for Long Beach.

C. C. Finn, Northwest manager of the Finn Metal Works, San Francisco, was recently honor guest and principal speaker at the weekly meeting of the Seattle Electrical Club. Mr. Finn spoke on "Bearings and Babbitt."

D. W. Henderson, general superintendent of the Seattle municipal railways, is in Salt Lake City, as an expert witness before the state industrial commission of Utah, regarding the operation of one-man cars.

P. H. Booth, sales manager of the Edison Electric Appliance Company at the Ontario, Calif., factory, has just returned from an eastern trip during which he represented the Los Angeles Electric Club and the California Electrical Cooperative Campaign at the convention of local electrical leagues at Association Island. R. A. Balzari, of the San Francisco office of the Westinghouse Electric & Manufacturing Company, represented the San Fran-

E. V. Peterson has been appointed manager of the recently organized merchandising division of the Seattle office of the Westinghouse Electric and Manufacturing Company.

H. D. Hawks, general sales manager of the rolling mills department of the Anaconda Copper Mining Company, is a recent San Francisco and Los Angeles visitor. Mr. Hawks is making an extensive business trip throughout the entire Pacific Coast region.

W. E. Ringwood, for the past sixteen years with the firm of Harron, Rickard and McCone of San Francisco, has resigned to become vice-president of the Eccles and Smith Company of San Francisco and Los Angeles.

Lewis G. Carpenter, hydraulic engineer, H. I. Reid, civil engineer, O. F. Lackey, vice-president of the Colorado Springs Light, Heat & Power Company, and D. K. Kennedy, general superintendent of the same company, recently completed a tour of investigation of the Pikes Peak region for the purpose of making a survey of power possibilities.

W. S. Murray, chairman of the Super Power Committee survey on the Atlantic Coast, is a recent Pacific Coast visitor. Mr. Murray, it will be recalled, made an exhaustive report for the National Electric Light Association on the Hydro Electric Power Commission of Ontario, Canada. He will spend some weeks in California.

J. P. Pulliam, of Milwaukee, Wis., president of the Eastern Oregon Light and Power Company, of Baker, recently made his annual tour of inspection over the company's properties. General Manager, J. P. Lottridge, accompanied Mr. Pulliam.

W. S. Rugg, assistant to the vice-president, has been appointed general manager of sales of the Westinghouse Electric & Manufacturing Company. The appointment, which was announced by Vice-president H. D. Shute, takes effect immediately.

R. R. Roblev, operating engineer of the Portland Railway Light & Power Company, has been attending the meetings of the National Technical Committee of the N.E.L.A. at Milwaukee, Wis., which were in session September 18 to 21 inclusive. Mr. Roblev will consult with the engineers of the General Electric Company at Schenectady on company matters and will then spend a few days in New York City before starting on the return trip.

Jerry Barth, formerly owner of the West Sixth Street Electric Company and more recently connected with the McMillan Electric Company, is now connected with the Edison Mazda Lamp Department of the Pacific States Electric Company, Los Angeles, assisting W. R. Edwards, manager of that department.

H. K. Winterer, industrial control specialist of the General Electric Company's Los Angeles office, has recently left for their factory at Schenectady to study the latest developments in industrial control apparatus and will be gone for about two months.

H. Alex Hibbard, in the interests of cooperative development of the Denver Association of Electrical Contractors and Dealers, has accepted the office of secretary of that organization, although he himself is a manufacturers' agent.

J. F. Dostal, the newly elected president of the Rocky Mountain division of the N. E. L. A., has been prominently identified with organized effort in the electrical industry since his graduation from Purdue University in 1902. He entered the engineering department of the old Denver Gas and Electric Company the same year and after several years in charge of distribution became



J. F. DOSTAL

the electrical superintendent. He went to Colorado Springs in 1911 as general manager of the Colorado Light, Heat and Power Company, of the central station in that city, and is still the incumbent of that position. He served one term as president of the Colorado Public Service Association and for two years was secretary and treasurer. From 1908-11 he held high offices in the national Jovian order. He is a member of the Rocky Mountain Committee on Public Utility Information and is also prominent in the affairs of the Rotary and Engineers' clubs of Colorado Springs.

Edward H. Sharpe, formerly special representative of the executive department of the Pacific Electric Railway, of Los Angeles, has just recently severed his connection with that company and is now in charge of the publicity activities of the Victor-Girard Company.

Edward C. Thomas, formerly general agent in charge of advertising the Pacific Electric Railway Company, of Los Angeles, has been appointed special representative of the executive department, and will assume his new duties immediately upon his return from Chicago where he is now attending the annual convention of the American Electric Railway Association.

R. E. Fisher, vice-president of the Pacific Gas & Electric Company and chairman of the Advisory Committee of the California Electrical Cooperative Campaign, and the following members of the Advisory Committee, were all in Los Angeles for a meeting of that Committee on October 6th; Garnett Young, Garnett Young & Co.; W. S. Berry, sales manager, Western Electric Company; Clyde L. Chamblin; C. C. Courtwright; Robt. L. Eltringham, all of San Francisco, and Geo. T. Bigelow, of Southern Sierras Power Company, Riverside.



P. H. BOOTH

cisco Electrical Development League and the Cooperative Campaign at the meeting. The sessions, sponsored by the Society for Electrical Development, Inc., brought out many points of interest to the electrical cooperative movement and resulted in the passage of a resolution declaring for the formation of such organizations in every community capable of supporting one.

The Roller-Smith Company, New York, has just issued Bulletin No. 250, which describes its portable d.c. galvanometers, types LGD and KGD. These two galvanometers were designed particularly for educational institutions and laboratories. A full description of each type of galvanometer is contained in the folder.

N. R. Crooks and Richard Nathan, formerly doing a retail business in Denver as the Crooks-Nathan Household Appliance Co., have established their new headquarters at 305 Commonwealth Building in that city. They will distribute several lines of appliances and other non-electric household necessities and will also serve as manufacturer's representatives.

George Richards & Company, Chicago, has recently made an addition to the present Hemco Line of plugs, made up of the Hemco Twin-Lite and Hemco Tach-Lite plugs. This new item is called the Hemco Trip-Lite plug. It has three outlets, all of which are threaded so that the Uno type of shade holder can screw directly on the threads. The clamp type of shade holders fasten over the threaded ends of the plugs.

The Steel City Electric Company, Pittsburgh, has just issued its Distributor's Discount Sheet No. 217, which cancels sheet No. 216.

Hobart Brothers, Troy, Ohio, have issued Bulletin No. 78H which contains a description of the constant potential charging outfits made by the company.

The Whitney Electric Co. in Colorado Springs, Colo., has added a radio department to its business and is boosting a movement in that city to provide local broadcasting facilities.

The Arthur-Fowler Company, manufacturers of electric water heaters and accessories of Spokane, has produced a new tank cover for domestic range boilers. This will supplement its line of flexible laced covers, being particularly adapted for districts where the cost of current for water heating is higher and insulation of the highest efficiency necessary. The new cover is called "Enamet" and consists of three-inch insulation built into an outer metal shell finished in white enamel. Recent cooling tests on a 40-gal. tank covered with an Enamet gave a temperature of 112 deg. F. 72 hours after the current was cut off.

The Westinghouse Electric & Manufacturing Company has issued a new price list for its electric ware and ranges. This new list is for its catalogs No. 8C and 8D.

The F. W. Wakefield Brass Company, of Vermilion, Ohio, has announced an accessory line of "Red Spot" hangers and brackets for commercial lighting. These units supplement the regular "Red Spot" line and are intended for lighting of hallways, rest rooms, closets, etc. They include a ceiling type fixture, one of the suspension type, and two wall brackets, one upright and one pendant, all of the same standard construction as regular "Red Spot" hangers.

The Moe-Bridges Company, Milwaukee, Wis., has just issued a new 65-page catalog, which illustrates its line of electrical fixtures. This can be obtained by writing either its San Francisco branch or the home office.

Manufacturer, Dealer, and Jobber Activities

The National X-Ray Reflector Company, of Chicago, has published its Bulletin No. 360 which gives detailed description of color lighting in show windows by use of the gelatin color slides manufactured by that company. The folder describes the effects that may be secured with the color-ray slides. This company also has published bulletins No. 347 and 391 which describe the X-Ray Curtis Adapter and the X-Ray Eye Comfort Luminaire manufactured by it for home use.

The Electric Waffle Iron Company, New York, has recently placed on the market the "Yum Yum" line of electric waffle irons. These are in several different sizes, being both for commercial and domestic use. Gardiner Brothers of San Francisco are the western representatives of the manufacturing company.

The General Electric Company has issued Bulletin 46108 describing the Type M-4 Demand Meter which is manufactured by the company and designed for use in combination with a watt-hour meter to indicate maximum demand. It is of the so-called "block interval" type indicating the maximum demand integrated and averaged over a definite time interval. The windings of the M-4 demand meters are adapted for a maximum of 240 volts and can be furnished self-contained for use on all standard frequencies. For operation on higher voltages such as 440 or 550 a small transformer, Type V-3, is furnished to provide a source of 110 volts for the motor and operating coil. Standard

time intervals are 15, 30 and 60 minutes. This meter is not recommended for intervals of less than 15 minutes.

Garland-Affolter Company of San Francisco has recently been appointed agent for the Jeffery DeWitt line of insulators in the state of California.

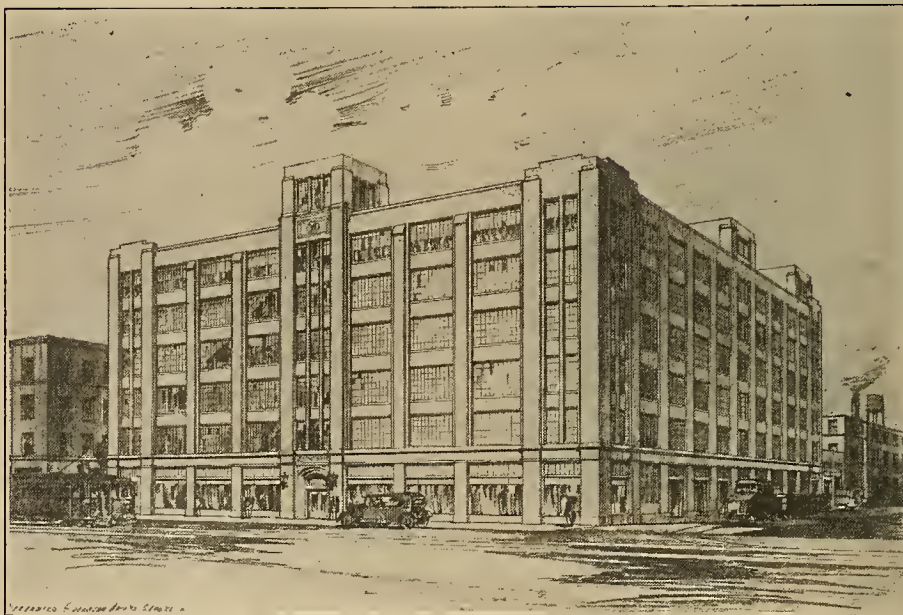
The Illinois Electric Porcelain Company, Macomb, Ill., announces that it is now manufacturing high tension line insulators on a greater scale than heretofore. Additional equipment has been installed to enable the company to maintain its standard of quality. A new catalog is in process and can be obtained directly from the company.

The Trumbull Electric Manufacturing Company of Plainville, Conn., has recently issued and distributed Bulletin No. 4 which gives descriptions of the company's line of safety and externally operated switches. The bulletin is divided into four sections, the different classes of switches being grouped in separate sections.

The National Metal Moulding Company, Pittsburgh, Pa., has recently issued Catalog No. 250 which gives prices, sizes and description of boxes, covers and other items manufactured by the company. All similar items are grouped together in the catalog regardless of the size.

The Magnavox Company, of Oakland, Calif., has completed the new addition to its plant and is now moving into it. Thirty-two thousand sq. ft. of floor space will be added in this way. The company has 300 hp. of electrical equipment at the present time.

The Sprague Electric Works of the General Electric Company, New York, has recently published Bulletin No. 68912 which describes the Sprague Electric Type WX Hoist. This hoist is a worm drive, with $\frac{1}{2}$ and 1-ton capacity.



WESTINGHOUSE HAS NEW HOME IN LOS ANGELES

The Westinghouse Electric & Manufacturing Company has just recently moved its Los Angeles offices from the Van Nuys Building to its magnificent new home at 4th and San Pedro Streets. It has a 6-story, class A building of reinforced concrete with offices and salesroom on the sixth floor. The ground and second floors are given over to the warehouse and service departments so that this will enable this company to render more efficient service to its customers in the future. The intervening floors will be leased for manufacturing purposes. The building has a total area of 207,000 sq. ft. and is equipped with its own substation, having a capacity of 650 kva. There are also fire alarm and sprinkler systems. The company has 275 employees in its Los Angeles sales and shop organization.

TRADE OUTLOOK

SAN FRANCISCO

During Market Week in San Francisco 1,000 out-of-town buyers were registered in the city. Large sales were reported by all jobbers throughout the week. The Industrial Exposition now in progress has aroused considerable comment and should encourage buying and development in general.

Unsettled conditions following the recent strikes are being removed and the rehabilitation and new building enterprises of the railroads will furnish an increased demand for workers. Building continues fairly strong and several new real estate additions have been opened. East Bay realtors displayed twelve furnished and electrically equipped homes to many interested prospects during their campaigns.

Port business is growing, with coastwise ships and those en route to the Orient and Southwest carrying capacity cargoes. Machinery, electrical goods, cereals, photographic goods, chemicals and dry goods made up the most of the cargoes.

The Investment Banker's Convention at Del Monte, Calif., has enabled the local men to acquaint the visitors with the larger hydroelectric developments in northern California and as a result a firmer belief in securities behind these enterprises will undoubtedly result.

Record shipments of fruit have been made by growers and received by canneries, but there has been a shortage of refrigerator cars which caused serious damage to grape growers.

SEATTLE

The Pacific Northwest is being seriously handicapped by a car shortage more acute than has been experienced for several years, according to railroad men, lumber and shingle manufacturers, and other shippers. Added to the present shortage is the growing demand for cars arising from the opening of the apple shipping season, and increased demands for cars for grain and hay in the farming districts. A large number of shingle mills have been forced to close because of lack of cars, and a number of mills away from tidewater and with limited storage facilities, have had to suspend operations. The State Department of Public Works, declaring an emergency to exist, has decided to reestablish much the same supervision as was exercised during the war.

The month of September made a good showing in new building work in the city, with a total of more than \$1,250,000 in permits issued during the month. A feature of the month's activities was the large number of residences contracted for. Electrical jobbers report that the month was particularly satisfactory in their line, due to the heavy demand for home fixtures. The Electrical Home exhibits, viewed by an exceptionally large number of people, are expected to greatly stimulate interest

in electrical equipment in the home, and contractors report that many inquiries regarding this line have been made by prospective home builders.

Business among electrical jobbers and contractors is reported very satisfactory for the month of September and first week in October.

The usual fall demand for lamps is beginning to materialize strongly, very largely from residence demand.

LOS ANGELES

Building activities in Los Angeles during the month of September reached the huge sum of \$10,267,894 with 4275 permits issued during this period. This represents an increase of 25 per cent over the same period a year ago. During the month of August, Los Angeles ranked fourth throughout the United States. Bank clearings for the last fifteen days of September amounted to \$224,000,000.54 which is an increase over the corresponding period of last year of approximately 25 per cent with a total of \$182,223,662.21.

Abundant crops have injected a new stimulus into business, and the realization that prosperity is just ahead is causing new buying from retail consumers, which in turn is affording manufacturers and wholesalers unusual opportunities. Despite the car shortage owing to the recent rail strike, it is expected the citrus crop will be moved on schedule. Buying continues active and this is especially true in the purchase of electrical apparatus as regards the sale of large and small appliances and also in supply lines. With the advent of fall, retail buying is picking up.

PORTLAND

The general tone of business in and around Portland is very encouraging. The condition of the principle manufacturing industry, lumber, is about normal. Lumber prices remain firm with a slight upward tendency. The wool industry is also about normal. Grain and fruit crops are somewhat less than expected and have curtailed rural buying slightly. Water borne commerce from the port of Portland for the first nine months of the year is far above any previous records, with lumber, grain and wool as principal exports. Nearly half the lumber manufactured in this vicinity is now shipped by water.

Building activity in Portland this year will break all former records. The permits for the first nine months total \$18,544,330 as compared with \$20,886,202, for twelve months in 1910, the largest year. With the coming of wet weather, building operations are expected to slow up, though there is also a tendency toward more industrial construction.

Bank clearings and postal receipts show a considerable increase over September, 1921. Prices in electrical lines are very stable and stocks generally

are in good shape. Central station generation in Portland recently passed all former records for twenty-four hour generation and now exceeds last year by 20 per cent.

DENVER

Bank clearings as a barometer of business indicate clearly the volume of business done in a community. Clearings of Denver banks for September totaled \$131,959,358, an increase of \$3,546,791 over the same period in 1921. Moreover figures just compiled on national bank reports show an average deposit of \$669 per capita, the highest figure in the history of local banking circles.

Similar optimism is reflected in the building program. With almost three months of the year remaining, the amount of building authorized already exceeds by \$1,064,281, the total amount authorized in 1890, the record breaking year up to 1922. During the first four days of October, 93 permits involving an expenditure of \$276,200 were issued.

Wiring supplies as a consequence are moving rapidly. Wire, rubber covered and copper, conduit, porcelain, and fittings lead the market. Transmission materials and pole line hardware are in demand outside the bigger cities. Power apparatus is loosening up but appliance sales are still dull. All jobbers report increases—two of them record months.

SALT LAKE CITY

The most important event in financial circles during the past few weeks was the consolidation of the National Bank of the Republic and the Continental National bank, in Salt Lake City, under the name of the latter bank, effective October 2. The new institution begins business with a capitalization of \$600,000, a surplus of \$100,000, and total resources of approximately \$10,000,000. A new eighteen-story building will ultimately house the new bank, the work on which will be under way within a few weeks.

Mining conditions continue to be very satisfactory. The Utah Copper company at Bingham, Utah, has thirteen steam shovels at work, and is shipping an average of 17,000 tons of ore daily to the mill at Garfield.

With the new high tariff, the sugar industry is being restored to a more profitable basis, and within a few years the plants should return a revenue large enough to overcome the deficits suffered in 1920 and 1921. The fall sugar-making campaign is now on, which means the distribution of large sums of money among the beet-growers, and the employment of a large number of people by the sugar companies.

Crop conditions appear to be good, with the fall harvesting well under way.

The electrical interests expect to derive considerable benefit, in the way of increased sales of appliances, and a general increase in the use of electricity, as a result of the electrical exposition which has just come to a successful close in Salt Lake City.

CONSTRUCTION NEWS

Calif., San Francisco—Apartments—James Welsh, owner, is planning to erect a modern six-story and basement concrete apartment house on his property at the northeast corner of Taylor and Derby Place. The building will contain 33 apartments and will cost approximately \$70,000.

Calif., San Francisco—Apartments—S. and G. Gump have been granted a permit to erect a six-story brick apartment building on the southwest corner of Geary and Jones Streets; estimated cost, \$85,000.

Calif., Sacramento—Office-Warehouse—The Crane Company is planning the erection of a building at Front and M Streets to cost approximately \$136,000.

Calif., San Francisco—Apartments—C. S. Grillo, of the Standard Investment Company, will build an apartment house on the south side of O'Farrell Street, between Hyde and Polk, to cost \$120,000. Wm. Beasley, architect, is planning a number of electric innovations in the structure.

Calif., Van Nuys—Business Block—R. R. Edwards is planning the erection of a brick business block on Sherman Way between Erwin and Delano, adjoining his present building. R. J. Baird is also planning to erect a one-story building on East Friar Street to be occupied by the Van Nuys Nursery Company as a sales room. R. R. Edwards Building Company will construct both of these buildings.

Calif., Arbuckle—School—Work has been commenced on the \$70,000 Arbuckle Union High School building, which is expected to be finished for occupancy by Jan. 1, 1923. Herndon and Finnegan, Sacramento, have the contract. Jens. C. Peterson, Sacramento, designed the building. The structure is to be of brick with a tile roof. It will include six class rooms, an auditorium with a seating capacity of 500 persons, a stage and two dressing rooms, a principal's office, teachers' room, library and kitchen.

Calif., Folsom—School—The contract for the erection of a manual training building at the Folsom Grammar school has been awarded to H. A. Hendren of Fair Oaks. The building will be a stucco finish, wooden structure.

Calif., Colusa—School—The proposal to bond county for \$250,000 for a county High School to be located in Colusa failed to carry at a recent election.

Calif., Los Angeles—Lodge—The Odd Fellows of Los Angeles have completed arrangements for the construction of a modern three-story and basement Class "A" building on its property at Twelfth and Flower Streets, to cost approximately \$250,000. Morgan, Walls & Morgan, architects, have prepared plans for the building.

Calif., Redding—School—The trustees of the Redding school district have let the contracts for the new grammar school building for \$97,000 to Herndon & Finnegan, for general construction work, Woods Bros., electrical work, and Lupen, Hawley & Thing, plumbing and heating apparatus.

Calif., San Francisco—Office and Stores—H. & W. Pierce Company is planning the erection of a three-story and basement reinforced concrete store and office building on the south side of Sacramento west of Front street. Cost is estimated at \$70,000. B. G. McDougal is the architect and the Lindgren Company, contractor.

Calif., Chico—School—Polk & Evans of Chico have been awarded contract for building the new Shasta Union Grammar School on a bid of \$34,400.

Calif., San Francisco—Apartments—G. F. Barnard, owner, will erect a two-story and basement frame apartment house on the northwest corner of Cole and Parnassus, to cost approximately \$43,000. Theo. W. Lenzen, 760 Humboldt Bank Building is the architect.

Calif., San Luis Obispo—Hotel—J. L. Anderson, of this city, has commissioned C. A. Meusforffer, San Francisco architect, to prepare plans for a five-story concrete hotel building at Monterey and Morro Streets. The building will contain 94 rooms with bath, six stores, a grill and spacious lobby and will cost approximately \$175,000.

Calif., Sacramento—Printing Plant—Davison & Nicolsen have been awarded the contract for the construction of the proposed new state printing plant on a site at 11th and O Streets, on a bid of \$94,800. The building will be of reinforced concrete construction and will consist of two stories and basement. George B. McDougall is state architect.

Calif., Fresno—School—Preliminary sketches are being prepared by Swartz and Ryland, architects, Fresno, for \$150,000 additions to the Tulare Union High School buildings, which will include physical education buildings, with gymnasium, manual art buildings and six additional classrooms.

Calif., Live Oak—School—Contract for the construction of the Live Oak grammar School, for which \$45,000 in bonds were voted last May, has been awarded to the Campbell Construction Company of Sacramento. W. H. Weeks, of San Francisco, is the architect.

Calif., Sacramento—State Buildings—Excavations have been completed and construction work started on state buildings to occupy two blocks across the street from the Capitol building. The new buildings will cost approximately \$3,000,000.

Calif., San Francisco—Schools—Home—At an election to be held on Nov. 21, the proposed \$12,000,000 school bond issue will be placed before the voters. A proposed bond issue of \$2,000,000 for the erection of a relief home will be voted upon at the same time.

Calif., El Monte—School—Bonds to the amount of \$65,000 for providing a site and building for a new grammar school were recently approved at an election here.

Calif., Los Angeles—Store—Preliminary plans for a six-story department store building to be erected at Vine Street and Hollywood Boulevard for Dr. O. F. Palmer are being prepared by Charles F. Plummer, architect. The building will be occupied by Broadway Bros., of Pasadena, and will cost approximately \$400,000.

Calif., Los Angeles—Auditorium—Los Angeles Excavating Company, Douglas Building, has been awarded a contract at about \$40,000 for excavating at Jefferson and Royal Sts., for the new Shrine auditorium. John C. Austin, 1125 Baker-Detwiller Building and A. M. Edelman, H. W. Hellman Building, associate architects. G. Albert Lansburgh, San Francisco, consulting architect. Plans for the class "A" building to be erected to replace the old auditorium will be ready for figures in about 60 days.

Calif., Los Angeles—Bank—Architect Edwin Bergstrom, 1128 Citizens National Bank Bldg., is completing plans for a 1-story building, to be erected at the northwest corner of Fair Oaks Ave. and El Centro Sts., So. Pasadena, for the South Pasadena Home Commercial & Savings Bank; \$20,000; brick construction, concrete and steel vault, tile floor, plate glass sides, interior fixtures.

Calif., San Francisco—Salesrooms—C. B. and J. G. Weil are planning the erection of a four-story concrete building on the east side of Fremont Street, north of Mission, to be used as salesrooms and loft; estimated cost, \$85,000.

Calif., San Diego—Hospital—Lange & Bergstrom, 819 Timken Bldg., San Diego, were awarded contract at \$482,500 for erecting wards and service building at hospital, San Diego, under spec. 4636. The bid was on items 1 and 2, and specified 300 days time limit.

Calif., Los Angeles—Apartment-Hotel—Architect H. H. Whiteley, 520 So. Western Ave., is preparing plans and will supervise the construction of a \$1,750,000 Spanish and Italian 7-story apartment hotel building on the Brokaw property, Hollywood Blvd., between Gower and Carlos Sts., and Bronson Ave. for the Davenport Corporation. It will contain 717 rooms, divided into 279 apartments and sixteen 2-story integral studios, basement and sub-basement containing electric heating system, ice plant, 250-car garage, commissary grocery, barber shop, beauty parlors, tea rooms, laundry. Four wings each, 150 x 75 ft., lobby 50 ft. diameter in first story; also 20 street shops, bank, palm room, club rooms, dining room, kitchen and 64 x 88 ft. auditorium. Four passenger and service elevators. Each apartment will have electric stoves, frigidors, disappearing and day-enport beds, tile baths and kitchens, part hardwood and enamel trim. Cross-shaped foundation, 350 x 250 ft., steel frame, brick filler walls, stucco exterior, tile roofing, Oriental rugs over tile corridor floors, tile lobby floor, found. landscaping, vacuum cleaning system. Each end apartment will have tile patio on the roof of the outer and lower apartment.

Calif., Oakland—School—The Oakland Board of Education awarded contract for the construction of the Roosevelt High School to M. C. Vaughn at \$422,500. The school will be located on Nineteenth avenue and East Nineteenth Street and will be equipped with radio and every modern device.

Calif., Fresno—Association Building—The building committee of the Y. W. C. A. unanimously accepted the completed plans of the new activities building to be erected at the corner of Tuolumne and L Streets. At the same time Miss Julia Morgan, architect of San Francisco, was authorized to let contracts for the erection of a two-story class "A" activities building of reinforced concrete. On the first floor a swimming pool, gymnasium, lobby reading room, parlors, tea room and general office will be included. The second floor will contain club rooms, parlors, rest rooms and three suites.

Calif., Sacramento—Hospital—George Wagner, of San Francisco, has charge of the erection of the new Sutter Hospital, 28th and L Streets, on a cost plus basis. It is estimated that the entire cost will be approximately \$650,000.

Calif., Huntington Beach—City Hall—Richard Drew, chairman of the Board of Trustees of Huntington Beach, has announced that Walker & Eisen, architects, are preparing plans for the new city hall which will cost \$65,000 and an auditorium for the city which will cost \$25,000. The city hall will be of class "C" construction, having plastered exterior with cast stone facings. The lower story will house fire department, jail and police department, as well as the city gas department. The second story will be divided into a council room, and offices for the City Engineer, City Attorney, City Clerk and other officials. The auditorium also will be of class "C" construction, with plastered exterior and cast stone facings. A stage has been provided for local theatrical work and the floor of the main auditorium will be so constructed as to permit its use as a banquet hall or for dances and similar entertainments.

Calif., Hollywood—Church—Plans have been approved by the building committee of the First Methodist Church South, of Hollywood, for a building to be erected on the northwest corner of Sunset Boulevard and Poinsetta Street, to cost, equipped, approximately \$90,000. Working drawings are being prepared by Robert H. Orr, architect.

Calif., San Francisco—Apartments—A three-story and basement Class "C" apartment building will be erected by C. S. Grillo on the north side of Turk St., west of Leavenworth at a cost of \$50,000.

Calif., Arrowhead Lake—Hotel—Plans for a new \$500,000 hotel building at Arrowhead Lake have been announced by Andrew Warmington, director of sales of the Arrowhead Lake Development. Arrangements have been concluded whereby A. L. Richmond, owner and operator of the Arlington Hotel of Santa Barbara, will build and manage the new Arlington Lodge, as it will be known, at Arrowhead Lake. The entire investment will reach over \$500,000 and the architecture of the lodge, designed by Architects Swasey and McAfee, will follow the lines of the old Norman type, which is being extensively used in Arrowhead Woods.

Calif., Ontario—School—Work on the new Junior High School, being erected on J Street at a cost of \$65,000, is progressing satisfactorily now, though it was delayed for a time by inability to procure materials. It is expected that the new structure will be completed and ready for use early next year. The Eighth Street school is being moved to form a unit with the new building, and will be placed in the rear of it. The Eighth street structure was so large it was necessary to cut it in halves and move these separately. F. K. Edwards, who has the contract for the Junior High School, reports that the foundation has been completed and the forms for the concrete work are now being made.

Calif., Los Angeles—Apartments—Architects Aleck Cullett and Claud Beelman, 408 Union Bank Bldg., have prepared preliminary plans for a 12-story class "A" apartment house at Hollywood Boulevard and Fuller Avenue for A. C. Blumenthal and Assoc. It will contain 500 rooms and will cost \$1,750,000. The site is located in a residential zone and application has been made to the city council to change the zoning ordinance to permit the erection of the apartment house.

Calif., El Monte—Store—Architects Walker & Eisen, 325 Pacific Finance Bldg., are preparing plans for a 1-story brick store and theatre building at El Monte for Walter E. Temple. Brick walls, 85 x 135 ft., press brick facing, plate glass, steel beams, composition roofing, metal skylights, cement floors; \$40,000.

Calif., Los Angeles—College—Architect Albert C. Martin, 430 Higgins Building, has prepared preliminary plans for a 4-story brick building to be erected on Hill St., between 11th and 12th Streets, for Southwestern University. J. J. Schumacher, business manager, Wilcox Bldg. It will be brick construction with stores in first story and university departments above; \$90,000.

Calif., Porterville—Offices—De Luxe Building Company, Los Angeles is preparing plans and will erect a bank, store and office building at Porterville, for First National Bank of Porterville; banking space, 20 offices, and 8 stores. Brick walls, pressed brick front, 2-story, 60 x 121 ft., tile roofing, tile and hardwood floors, plate glass, steam heating system, wrought iron work, hardwood trim, basement, copper, store fronts; \$68,000.

Calif., Hollywood — Club — The Milwaukee Building Company, Wright-Callender Building, is preparing plans and will erect a \$300,000

10-story concrete and hollow tile athletic club building at Sunset Blvd. and Hudson St., for the Hollywood Athletic Club. The basement will have a barber shop, Turkish baths, showers, dressing rooms, storage rooms, power plant and 1000 lockers. The first story will contain lobby, lounge, women's and men's check and rest rooms, main and ladies dining rooms, 350 lockers, gymnasium, 56 x 90 ft., with spectators balcony, natatorium, 56 x 80 ft., with swimming tank, 30 x 60 ft. The second story will have game rooms, private dining rooms, and four handball courts. The upper floors in the tower will contain 56 sleeping rooms each with bath. Stucco exterior, art stone trim, tile and composition roofing, tile and hardwood floors.

Calif., Los Angeles—Store—Stanton, Reed & Hibbard, 620 Metropolitan Bldg., have completed plans for a class "A" store and loft building, to be erected on Broadway between 6th and 7th Streets for Starr Piano Company. It will be 8-story, basement and intermediate floor; 38 x 140 ft., steel frame construction, single span, reinforced concrete floors, freight and passenger elevators, marble and tile work; \$250,000. Structural steel contract has been let to Baker Iron Works. All other work will be included in the general contract. Bids will be taken this week.

Calif., Los Angeles—Store—C. A. Edwards, Citizens National Bank Bldg., has the contract for excavating for the ten-story addition to be erected to the J. W. Robinson Co. department store building at 7th Street and Grand Avenue. The building will be 60 x 330 feet and will extend from Grand Ave. to Hope St. Scofield Engineering Construction Co., Pacific Finance Building, has the contract on a percentage basis for erecting the addition. Dodd & Richards, 905 Brack Shops Bldg., architects. Steel frame construction, brick walls, pressed brick and terra cotta facing, plate glass, reinforced concrete floors, elevators, hardwood trim; \$1,000,000.

Calif., Glendale—Structural Steel—Brombacher Iron Works, 1666 Long Beach Ave., was awarded a contract at \$15,250 for furnishing and erecting struc. steel for the class A store and office building at Glendale for John Lawson; Alfred F. Priest, 619 Fay Bldg., architect.

Calif., Arcadia—Store—E. H. & J. A. McDonald, formerly of Monrovia, will build a store building on East Huntington Drive, to be occupied by their electrical goods store.

Calif., Merced—Gymnasium—Architects W. J. Wythe, Central Bank Bldg., Oakland, and W. E. Bedesen, Merced, are preparing working drawings for a reinforced concrete and terra cotta gymnasium for Merced High School District. Estimated cost \$75,000. The building will have tile roofing.

Calif., Long Beach — Mausoleum — Cecil E. Bryan Company, Inc., engineers, Chicago, has prepared plans and will build a \$300,000 concrete Spanish mausoleum structure on a 5-acre site at Cherry Ave. and Whittier Blvd., for the Sunnyside Mausoleum Co., 342 American Ave., Long Beach. Foundation 200 x 102 ft., 1,000 crypts, 1,000 sarcophagi, niches, chapel 25 x 70 ft., pipe organ, chimera tower, rest rooms, offices, art glass windows, marble inter., bronze trim, ventilating system.

Calif., Santa Barbara—Club—Snook & Kenyon have the contract at about \$75,000 to erect the new University Club bldg. at Santa Barbara and Sola Sts. Soule, Murphy & Hastings, architects. It will be 2-story of Spanish Colonial style with a tile roof. Work will start at once.

Calif., Riverside—School—Architect G. Stanley Wilson has been commissioned to proceed with cost estimates, etc., for a ten-room school bldg. to supplement the Lincoln school on W. 6th St. Concrete construction, 2-story. The plans have

been approved. Cost will be defrayed from \$225,000 grammar school bond issue voted recently.

Calif., San Diego—School—Eckels, Lowerson & Wolstencraft have the contract at about \$42,000 to build the new parish school of Our Lady of Angels, at 24th and Market Sts. Plans by Architect J. E. Lovess. Building will be 2-story, 75 x 80 ft., of brick and terra cotta constr., and contain 8 classrooms, offices, teachers' rooms, accommodating 400 pupils. Building will have hardwood floors throughout. Work has started.

Calif., Santa Barbara—Hotel—Architect Leonard A. Cooke has completed plans for a 4-story modern hotel bldg., to be erected on East Haley St. for Dwight Faulding, photographer. Eighty-four rooms, 28 with baths, steam heating, etc. The ground floor will have lobby and stores. Est. cost, \$60,000.

Calif., Long Beach—School—Architects John C. Austin, 1129 Baker-Detwiler Bldg., L. A., and W. Horace Austin, 222 First Nat'l Bank Bldg., Long Beach, assoc., have been commissioned to prepare plans for a \$100,000, 2-story brick elementary school at 14th St. and Pacific Ave., Long Beach. Nine standard classrooms, administration offices, open air study rooms and kindergarten.

Calif., Long Beach—City Hall—Bids are being received by City Manager Hewes, Long Beach City Hall, for completing the interior of the new city hall in Long Beach. Work will include finish cement surface on four floors and basement, hollow tile partitions, steam heating, plumbing, painting, wiring, vault, jail cells and corridors, elevators. Bids will be taken separately and as a whole. W. Horace Austin, 222 First National Bank Bldg., Long Beach, architect; \$200,000 available.

Calif., Glendale—Convent—General Construction Co., 249 N. Brand Blvd., has been awarded a contract at \$106,000 for all work complete for erecting a convent near Alhambra for the Carmelite Sisters, 622 W. 18th St., L. A. John C. Austin, 1125 Baker-Detwiler Bldg., architect. The bldg. will be 2-story 120 x 120 ft., containing chapel, sleeping rooms, baths, etc.; reinforced concrete const., plaster exterior, cast stone work, clay tile roofing, pine trim, beech floors, tile floors in bathrooms, gas heating.

Calif., Santa Monica—Bank—Office—Richardson Bldg. & Engr. Co., 1126 Story Bldg., has the general contract at \$28,200 to erect a 2-story and basement brick bank and office bldg. at 3rd St. and Santa Monica Blvd., Santa Monica, for Citizens State Bank of Santa Monica. Plans by Archt. C. F. Plummer, 1108 Story Bldg. Brick walls, terra cotta front, 2-story, 43 x 45 ft., steel columns, comp. rf., tile, marble and concr. floors, reinf. concr. vault, vault door, granite base, O. P. trim, plate glass, steel sash, metal skylights, ornam. wrought iron grille work.

Calif., Pomona—Bank—Architects Aleck Cullett and Claud Beelman, 408 Union Bank Bldg., are preparing plans for a 5-story, mezzanine story and basement, class A bank and office bldg. to be erected at Pomona for the First National Bank of that city. The bank will occupy a space 69 x 90 ft., with safe deposit dept. in the basement. There will also be one store-room in the first story. Each of the upper stories will contain 20 offices, dimensions 60 x 120 ft., reinforced concrete construction, brick filler walls, terra cotta and press. brick facing, plate glass, marble and tile work, comp. roofing, hardwood and pine trim, 2 elec. elevators, steam heating, etc. Plans will be ready for figures in 30 days. The bldg. will cost \$225,000.

Calif., Venice—Auditorium—Under the proposed municipal improvement program, city trustees wish to build a municipal auditorium, library and chamber of commerce building, with

band stand. It is proposed to construct a building with plaza having seating capacity of 2,000 or more, and parking space for 5,000 machines.

Colo., Denver—Refinery—The Producers and Refiners Corporation has taken title to a tract of 80 acres just west of Casper, Wyo., upon which will be erected the largest casing head gasoline plant in one unit in the world. This plant, which will be built by the Hope Engineering Company, will be in operation by Nov. 1 and will treat approximately 30,000,000 cu. ft. of natural gas per day. Simultaneously with the construction of the Casper plant the corporation will begin the erection of a compression casing head plant at Riverton with a capacity of 5,000,000 cu. ft. per day. Other units will be added to this plant as necessary.

Colo., Denver—Freight House—P. J. Sullivan has been awarded contract for the construction of the new Union Pacific freight house, to be erected between 19th and 21st on Wynkoop St. The proposed building will cost approximately \$230,000.

Colo., Denver—Offices—Plans are being prepared for a five-story building to be erected by the Three Rules Dry Goods Company at West Irvington Place and Broadway. H. C. Cones is president of the company. Work will start in the spring.

Colo., Denver—Garage—Jas. A. Curran will erect at the corner of Broadway, Arapahoe and 23rd Streets a new garage to house the motor vehicles for the post office department.

Colo., Denver—Hospital—Arvid Olson was the low bidder on the excavating and sub structure work of the new University of Colorado medical school and general hospital to be built at Eighth and Colorado Boulevard. Bids for other phases of the construction work are now being received by the architects, Briscoe, Fisher and Fisher, under the direction of the board of regents, of which group Thomas I. Wilkinson, a prominent mining engineer, is the chairman on construction.

Colo., Denver—Apartment—A forty-one apartment building costing \$70,000 has been started at 930 Acoma St., close to the down town section, by the Western Finance Development Co.

Ore., Bend—Lodge—Plans for a \$75,000 Odd Fellows Building at Bend, Ore., have been prepared by Tourtellotte and Hummel of this city. The new building will be three stories in height with stores on the street level, and on the upper floors, some offices in addition to banquet and lodge rooms.

Ore., Portland—Hotel—The construction of a ten-story hotel to cost in excess of \$1,000,000 has been announced by O. K. Jeffrey and his associates. The hotel will occupy a part of a tract 200 x 220 ft., facing Washington Street between Twentieth and Ella Streets. Sutton and Whitney have been retained as architects.

Ore., Portland—Apartment—Plans for a modern nine-story apartment hotel to occupy a quarter block have been completed by Carl Linde for the Regent Investment Company. Cost to be around \$350,000.

Ore., Salem—School—A new dormitory at the Chemawa Indian School will be erected by Hughes and Pugh, contractors of Salem. The bid of the local firm was slightly over \$52,000. The new building will replace Brewer Hall.

Ore., Medford—Armory—Bids for a new armory were opened Sept. 30. It has been unofficially stated that the bid of Stephenson & Kaulbach, of Portland, for a concrete structure would be accepted. Completion within four months will be required.

Ore., Portland—Hotel—A new three-story hotel and apartment house costing with the site, about \$80,000, is to be erected at the southeast corner of Grand Ave. and Taylor St. Work

will be started next month. C. L. Goodrich is the architect.

Ore., Portland—High School—Approval of the general plans for the new Grant High School has been given by the school board and the architects, Knighton and Howell, were instructed to proceed with the working drawings. Construction will start about the first of the year. This building, which will be located on a 29-acre tract, will be built in units as the need develops. The total cost is estimated at \$400,000.

Ore., Portland—Plans for a one-story concrete building to cost \$28,000 have been prepared by Houghtaling and Dongan, architects. The building will be occupied by the Roberts Motor Car Company. The plans call for a light repair shop, a large stock room and a combined show and storage room.

Ore., Portland—Lodge—The new \$75,000 addition to the Washington Masonic lodge building at East Eighth and Burnside streets will be started within the month, according to the plans of the building committee, which has been working on the project for the past six weeks. In addition the Artisans announced that a temple costing \$40,000 will be erected by Al Azar Pyramid of that organization at the southwest corner of Third and Columbia streets. The building already owned by the order and to which the addition will be joined is valued at \$75,000. Drawings and plans have been completed by C. C. Robbins, architect, and the bids will be received as soon as the final details are settled by the building committee. The structure will provide a 50 x 85 ft. ball room or banquet hall as the occasion demands, and the first floor surrounded by a mezzanine balcony with reception and cloak rooms. The second floor will be so constructed that it will serve as an amphitheater with a stage at one end and with a seating capacity of 900.

Ore., Portland—Apartments—Peters Construction Company is planning to erect a two-story and basement concrete and brick apartment building at the northwest corner of Tenth and College Streets, to cost approximately \$70,000. Claussen & Claussen have prepared plans for the new structure. The building is to be ready for occupancy Dec. 1.

Ore., Eugene—University Buildings—Plans are being prepared under the direction of E. F. Lawrence, dean of the school of architecture, University of Oregon, for a new building to house the school of art and also a wing on McClure hall to provide quarters for the departments that suffered in the recent campus fire. The new structures will cost approximately \$65,000.

Utah, Huntington—School—Ground has been broken for the erection of a new public school building to replace the old one destroyed by fire, on Main Street opposite the city park. The building, which will cost \$41,500, will be 66 x 148 ft. and contain twelve rooms. Construction of other school buildings in Orangeville, Emery and Clausen also will begin soon.

Utah, Salt Lake City—Residences—Thirty-eight houses will be erected in the immediate future on a five-acre tract at Twenty-first South and State Streets, by the Halloran-Judge Trust Company of Salt Lake City.

Utah, Provo—The city and county building committee and the Utah county and Provo city commissions have unanimously decided to complete the city and county building at Provo. Bids will be called for at an early date. Up to the present time the cost of this building has been approximately \$340,000. It is estimated by Architect Joseph Nelson that \$150,000 will complete the building, making the entire cost a little less than one-half million dollars.

Wash., Seattle—Apartments—John S. Hudson, Empire Building, will erect in Seattle a three-

story apartment building, 79 x 50 ft. in size, containing twenty two and three-room apartments, and costing \$48,000.

Utah, Salt Lake City—Bank—P. J. Walker, of P. J. Walker & Co., San Francisco, has been appointed supervising contractor for the new bank and office building of the Continental National Bank. Detailed plans of the new building are not yet complete but approved sketch provides for 17 stories above the banking rooms. Plans are being prepared by George W. Kelham, San Francisco architect.

Wash., Seattle—Hospital—Plans for the proposed General Hospital of Everett, in the hands of Stevens & Lee, Boston architects, are to be revised before contract is awarded, according to A. H. B. Jordan, president of the hospital association. When the plans are revised, new bids will be called. The lowest estimate received when bids were opened recently was \$267,400.

Wash., Seattle—Lodge—The B. P. O. Elks are planning a million dollar addition to their present home on land adjoining the present building. Work will be started within three months, according to announcement by J. C. Slater, chairman of the ways and means committee. Prizes will be awarded to the architects submitting the two best plans for the new club house.

Wash., Tacoma—Hotel—Within 10 days, the question of Tacoma's new hotel site will be determined upon by the 2,800 stockholders of the \$1,000,000 fund. Eighteen sites have been submitted to the trustees, and the stockholders will determine the matter. H. A. Rhodes is president of the Citizens Hotel Corporation.

Wash., Seattle—School—Plans for a proposed school for St. Mary's Parish, to cost \$80,000, have been completed by Lundberg & Mahon, Lyon Building. Building will be three stories, 152 x 77 ft., of mill construction, and will be built by day labor.

Wash., Seattle—Apartment—Plans for a \$65,000 apartment building, to be 107 x 57 ft., containing 35 apartments, for P. A. Tramontin, 3902 Burke Avenue, have been completed, and bids will be called for at once.

Wash., Tumwater—Brewery—The old brewery belonging to the Phez Company has been sold to a group of Salem, Ore., business men, who will remodel the plant and equip it for the manufacture of high grade paper. The new corporation will be known as the West Coast Pulp and Paper Company.

Wash., Seattle—Apartment—Plans for a \$175,000 bachelor apartment house to be constructed in Seattle are nearing completion by Architect Emil Guenther. Structure will be five stories high, 120 x 60 ft., and will contain 53 two-room suites, and 4 three-room apartments. Williams & Company represent the owners.

Wash., Seattle—Apartment—Plans for a three-story and basement apartment house have been completed by J. E. Douglas, and the contract awarded to Contractor E. A. Wisner for the structure. Building will be 100 x 50 ft., containing eight three-room apartments on each floor, and will cost \$50,000.

Wash., Everett—Theater—The owners of the Everett Theater have commissioned H. Ryan, architect, Seattle, to prepare plans for remodeling the theater throughout, at a cost of more than \$100,000. Steel and concrete will replace all the timber in the structure, and the seating capacity will be increased from 800 to 1,500. Inclines will replace stairways and the structure made strictly modern.

Wash., Kelso—Hotel—The Long-Bell Lumber Company has awarded to the West Lake Construction Company, of St. Louis, contract for the erection of a \$350,000 hotel at the company's new townsite near Kelso.

Journal of Electricity and Western Industry

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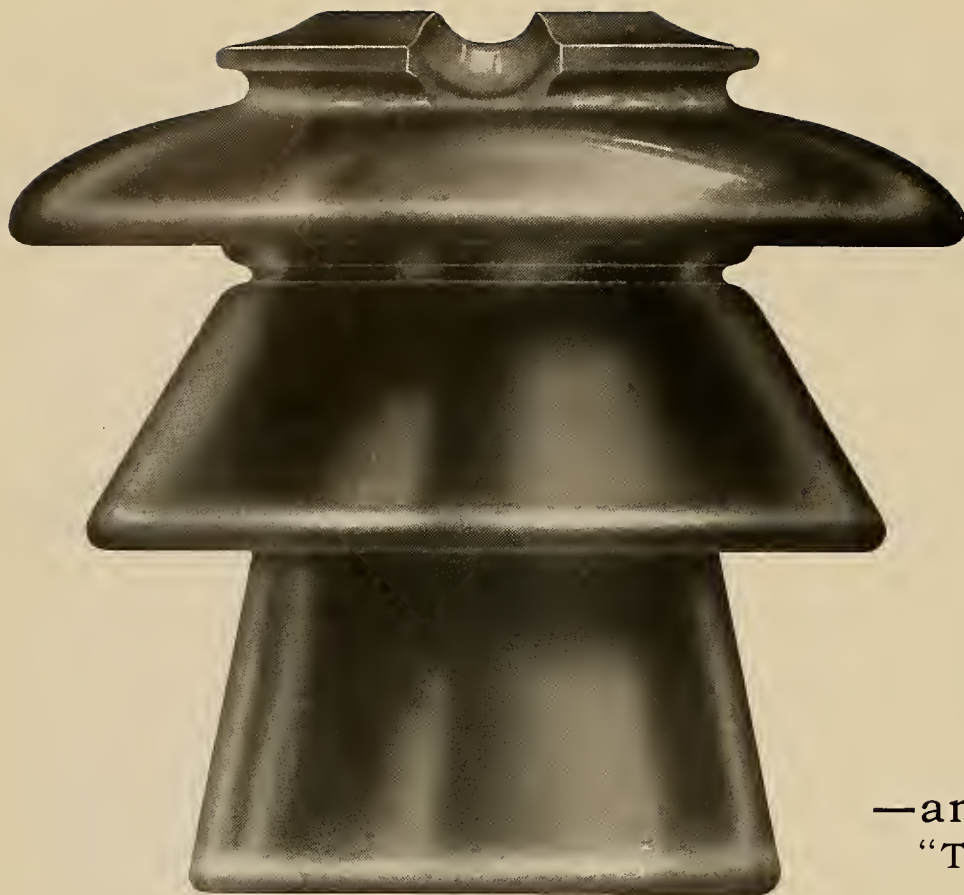
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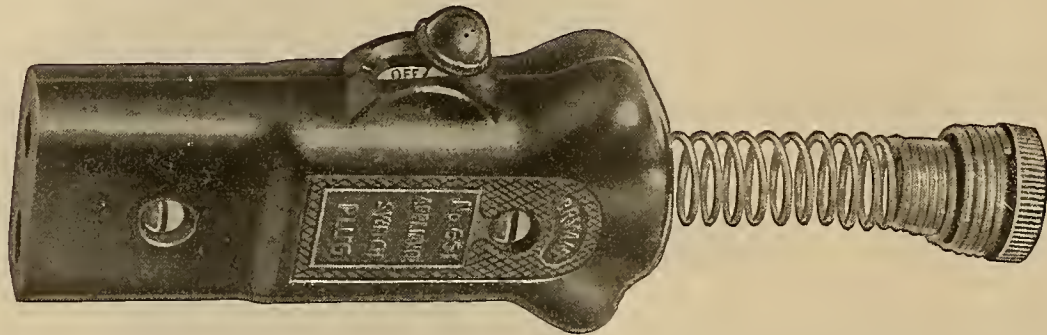
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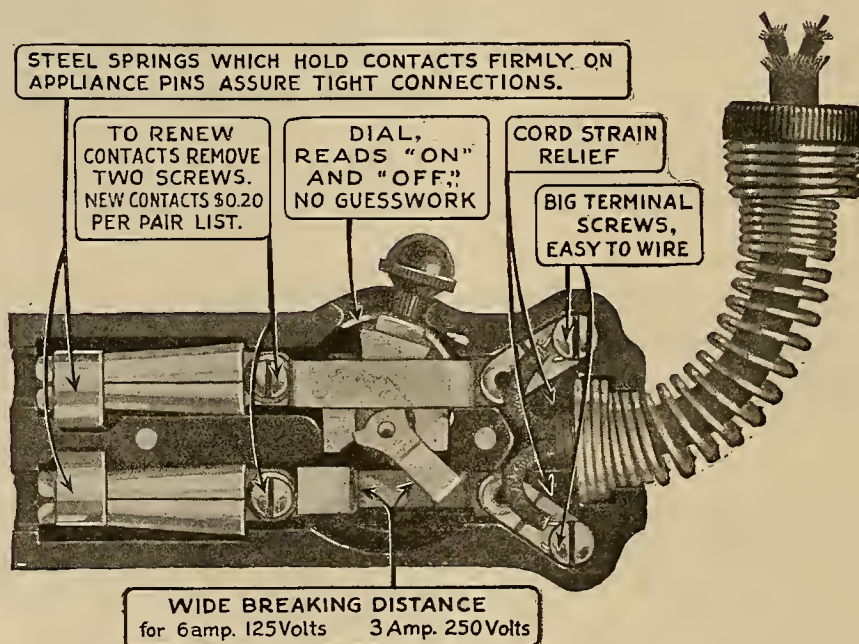


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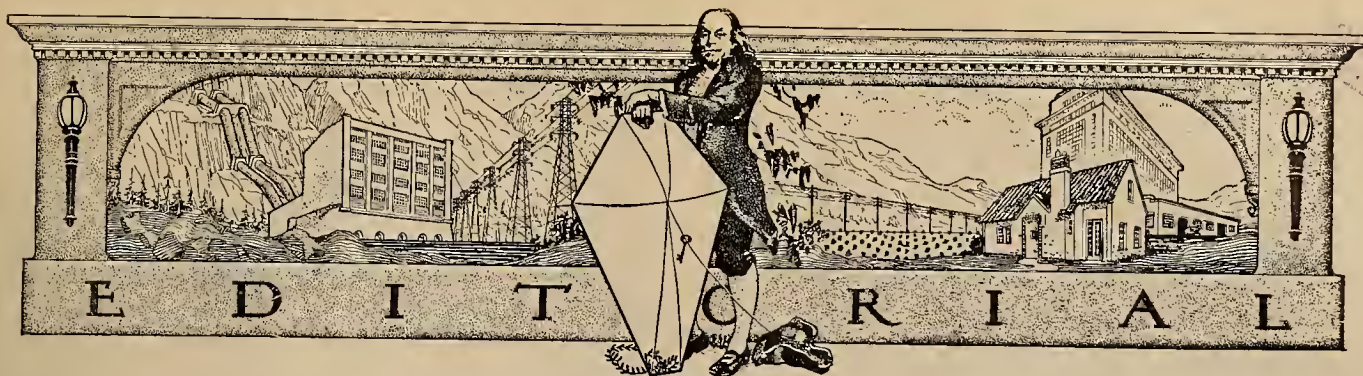
THE BRYANT ELECTRIC COMPANY

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Practical Socialism

THE people of the West have not as yet acquired a full understanding of the importance of the electric public utility industry. Yet the aggregate investment of the electric power companies throughout this region is of such proportions as to completely overshadow other similar classes of industry. In one western state the funded debt of the power companies is one-third of a billion dollars as compared with only one-fourth of a billion dollars in manufacturing establishments, an eighth of a billion dollars in water companies and an eighth of a billion dollars in street railways; with railroads, telephone and telegraph companies following, each representing about one-tenth of a billion dollars. The state indebtedness in this particular commonwealth is less than any of the figures mentioned.

THE public does not understand that because of the public regulation under which the power companies operate the companies are not permitted to establish rates sufficiently high to create a surplus large enough for necessary extensions of service. Hence there must be constant effort to induce new capital to enter the business.

AGAIN, the many details involved in the generation, transmission, and distribution of electrical energy by their very nomenclature are most difficult for the lay mind to grasp. People do not realize that electric power is inseparably connected with all industry; that its service gives life to all kinds of business activity, and that public utilities cannot think and do as they will.

This latter is despite the fact that for the past ten years strict public regulation has kept these utilities under adequate and just control, fully safeguarding the public interest.

PRESTON, in his history of England, says there are three things that hold nations and men together—community of race, community of religion, and community of interest. The most economic development of power service can only be brought about by a complete establishment of community of interest among all parties involved in the issue. It can never be solved by government competition with private business.

THERE is being developed in the West a plan known as customer ownership, a system of finance by which the consumers of electricity in a given community are allowed to purchase preferred or common stock in the utilities serving that community, one of the large electric companies having 48,000 individual holders of its common stock in the district that it serves. Elsewhere in this issue will be found complete information concerning the progress of this new plan of ownership in public utilities. Here, it would seem, is a real opportunity for the ultimate solution of the utility problem, a system whereby sound regulation, backed by an intelligent public understanding in the districts served, is combined with a community of interest whereby the consumers can acquire ownership in proportion to the value of the service rendered to each individual. This is practical socialism.



Professor Ryan to Have No Opponent in Coming A.I.E.E. Elections

IT IS a source of great gratification to men throughout the West that the name of Professor Harris J. Ryan of Stanford University has been placed upon the nomination roll for the next president of the American Institute of Electrical Engineers. The unanimity of approval with which the suggestion has been met throughout the nation demonstrates the affection and high regard with which Professor Ryan and his eminent attainments in the electrical profession are regarded. In a public announcement Farley Osgood graciously withdrew his name in favor of Professor Ryan, paying him the following tribute:

"Professor Ryan appeals to me as I am sure he will appeal to every Institute member. Aside from making evident the national character of the Institute and the fact that the choice of its president need not be determined by his contiguity to headquarters, there is the man himself.

"He has been an outstanding leader in electrical engineering. His work is internationally known and approved. His personal characteristics are such that all men love him, and I know that only his modesty has prevented his accepting a nomination at an earlier date. The Institute should take advantage of his consent."

This is but an indication of the nation-wide move to make his election unanimous. The West is pleased that a western man has been so widely endorsed for such a high position in the Institute. Professor Ryan has been an outstanding leader in electrical engineering for many years. His work is internationally known and approved. With the choice of a far western man as president, the Institute may indeed be said to embrace every nook and corner of the nation.

Extension of Publication Service by Society for Electrical Development

THE Society for Electrical Development represents to the electrical industry of the nation as a whole the only means at present available for a combination of action and effort that can serve in equal degree to benefit each element within the industry. It is producing results in the solution of problems mutual to all branches of the electrical industry and its progress has been creditable, considering the pioneering conditions it has faced since its inception.

In the dissemination of information designed to popularize the use of electricity the Society is rendering a notable service. It has succeeded in getting the message of "doing it electrically" into almost every form of public literature. Not the least in importance of the educational material furnished by this organization is a series of monographs and booklets, designed to serve as a permanent reference library of recognized trade practices within the industry. Formerly members of the Society only received copies of these publications. Recently a wise provision has been made whereby individuals, associations, local leagues and similar bodies, not members of the Society, may subscribe to all of the publications at an annual rate of \$25. The extension of this publication service will not only assist the society in acquainting the industry with the value of its work, but will give a wider distribution to

what is unquestionably authentic and able information of value to everyone connected with the electrical industry.

Evolution of Merchandising of Electrical Appliances

THE searching analysis which the merchandising branches of the electrical industry are now undergoing seems to have evolved one idea which is at variance with what was a few years ago commonly accepted to be incontestable. Students of the question tell us that the marriage of the contractor and the dealer is resulting in conjugal infelicity. The general verdict is that in most cases a speedy divorce is to be recommended.

Not so many years ago the electrical contractor was urged to set up a store and become a merchandiser—a dealer. Despite the fact that his training was probably along electrical and mechanical lines; that he knew little of specialty selling; that his capital was often insufficient; he was advised to move into the retail store district with its higher rent, invest in attractive fixtures and hire specialty salesmen.

While it is not claimed that in all cases more is to be gained by devoting time and energy to the increasing of a contracting business, rather than developing the sale of appliances, there has been a large number of business casualties among contractor-dealers attributable to merchandising failures. Merchandising is a highly developed, keenly competitive profession. It is a rare man who combines the qualifications of a successful contractor and a successful merchandiser. A contractor in a small town may develop a successful appliance business without interfering with his contracting activities, but in the larger centers the two are rarely ever successfully combined.

Court Upholds Power of Utility Commission in California Decision

THE power of the Railroad Commission to compel utilities to cease operations held by the commission to be illegal, was sustained by a unanimous decision of the Supreme Court of California recently received by the Railroad Commission of that state.

While the decision was rendered in dismissing a writ of review sought by Motor Transit Company against an order of the commission relating to local stage service, the court's interpretation of the powers of the commission applies in the case of all utilities, according to the legal department of the commission.

The motor company had raised the question that the commission did not have power to order it to discontinue a local operation on the claim that the commission did not have jurisdiction to grant "injunctive relief." The court held that the commission had power to make whatever order may be necessary in the exercise of its jurisdiction. As to the enforcement of such an order, the court referred with approval to a former decision upholding the

commission's right to punish for contempt, and points out that the commission has in addition the right to apply to the court for the use of the mandamus and injunctive powers of the courts, adding:

As a practical matter of procedure such an order is proper. If the order so given by the commission is obeyed, then no further legal steps are necessary. It is only when such an order is disregarded that it becomes necessary for the commission to institute an action in the courts to secure its enforcement. Until such order is given there is no basis upon which the commission can ask the aid of the courts.

The court upheld the commission's contention that automobile transportation companies operating prior to May 1, 1917, before the Automobile Transportation Act was adopted, are subject to regulation and that they cannot lawfully undertake subsequent local service by virtue of their previous through service rights.

Demagogue Held to Be Nature's Act to Keep Before Us Our Own Absurdities

SAYS the president of the National Founders Association, in a recent bulletin to members: "A correspondent of one of the newspapers recently asked plaintively: 'Must we have demagogues in public life?' The answer to this question is that they are inevitable as a result of nature and our system of politics. The Lord provided for infinite variety in humanity, and the wooden-headed, vacuous type which we know as the demagogue is one of nature's definite acts to keep continuously before us our own absurdities. It is a shame to accuse nature of specific intent in creating the demagogue, but it may well be that it is so. At the risk of being called unpatriotic, we venture to point out that the people of the country are very much to blame for the demagogue himself because from time to time they crown the vociferous ass with the laurel wreath of appreciation. They gather to hear him when he talks, they applaud his platitudes, the newspapers give him space, and good citizens are afraid of him. We listen tolerantly to his orations, resent his attacks, and give him an importance which nature never intended that he should have. The demagogue will cease to exist when intelligent citizens drive him out of business and when they take their rightful place as the determining factors in politics instead of leaving affairs to the unthinking."

Hocus Pocus Doesn't Work in Seattle Nor Will It Elsewhere

SINCE Seattle bought its street car lines some three years ago its transportation system has been the one big political football with which candidates for office have sought to buy votes.

Politicians were able to get the people to vote to pay \$15,000,000 for the line on the theory that by some "hocus pocus" the city would be able to maintain car fares at 5 cents whereas the private company would have to have an increase.

Well, the people now own the lines and instead of a 5-cent fare as they expected, they have been paying 10 cents or three rides for a quarter for a long time. Since the fare was increased, the polit-

ical slogan which has bought votes has been the promise that if elected the successful candidate would reduce the fare to a nickel. When in office, however, the candidate finds it cannot be done by the city any more than by a private company, unless the city wishes to load an enormous deficit upon the taxpayer, who in this case, in addition to his care fare is obligated by \$15,000,000 in bonds with annual interest charges.

Compare this situation which is actual, to the one which faces California where a measure introduced by a powerful group of socialistically inclined people is on the ballot to authorize the state to expend \$500,000,000 in the development of hydroelectric power projects.

The same promises of economy and cheap rates are made the citizens of California that were made to the people of Seattle. The fact remains, however, that the people of Seattle are paying one of the highest car fares in the United States with no promise of a reduction and they are deeply indebted as a municipality in addition.

California would find itself in a similar position, for all the politicians in the state could not make rates contrary to economic conditions and cost of production without loading a deficit on to the taxpayers.

Investment Bankers Extended Gracious Manifestation of Goodwill

GOVERNMENT with the consent of the governed still exists, at least in California, and when a considerable number of our free and untrammelled citizens do not consent, it makes at least one of our statutes a poor thing indeed. The investment bankers of the United States, in convention assembled at Del Monte, came for a good time. By all accounts, they had it. The program of sports apparently allotted several minutes each day for business. The evening's entertainment features were not especially particularized, but reports from credible eye witnesses dwell with reminiscent longing upon an accessory, rough, crude, but efficient, built of wood, of ample length, horizontally supported upon a structure suitable for the purpose. Whether a railing of brass, ordinarily some six inches above the ground rounded out the picture of days theoretically gone by, deponent saith not. Nevertheless there were white-clad attendants, strategically placed behind this crude, but efficient structure. They were men skilled in the arts and sciences of their calling. They were good mixers, an invaluable qualification to those who have something to sell—no it wasn't sold. It was given away, absolutely free to all comers, ad libitum, ad nauseam. Accounts vary as to the value of the commodities thus dispensed. Estimates run as high as six figures, at present market prices. It all goes to indicate, if not to prove, that there is a certain element among our citizens to whom law and order are excellent things when they apply to the other fellow. Oh Grape Juice, where is thy Sting? Oh, Volstead, where is thy Victory?

CURRENT COMMENT



The importance of radio in the maritime world was again demonstrated in the case of the steamship, City of Honolulu, which recently burned to the water's edge 600 miles off the

Radio Effects California coast, imperiling the
Speedy Rescue lives of both passengers and
in Ship Disaster crew. As soon as the fire was

discovered, the radio operator flashed out the position of the ship and an appeal for help. Three vessels picked up the message and immediately headed for the doomed steamer. Meanwhile shore stations had heard the message and ships were dispatched from the nearest ports. Within ten hours after the first message was sent out, all of the castaways were safely on board a rescue vessel.

The public seldom stops to think of the important role radio plays in shipping affairs. It requires a near disaster such as the case of the City of Honolulu to cause them to pause, wonder and give thanks.

The dismemberment of the lines of the Southern Pacific and Central Pacific companies was upheld by the United States Supreme Court when that body

Southern Pacific- denied the request of the former
Central Pacific company for a rehearing of the
Dismemberment case. Thus the entire matter

has been placed in the hands of the Interstate Commerce Commission. Since the final decision of the court the Southern Pacific has applied to the commission for permission to lease the lines of the Central Pacific, until such a time as the commission shall reach a final determination in the case.

The court decision was based upon the Sherman Anti-Trust Act of 1890. The new Transportation Act of 1920 gives the Interstate Commerce Commission affirmative power to authorize the consolidation of railroads without regard for anti-trust acts. The new policy of the government looks to the power of regulation and government control to protect the interests of the public in connection with railroad operations; instead of the anti-trust legislation such as the Sherman Act of 1890 in connection with questions of association or consolidation of railway companies. The suit decided by the Supreme Court against the Southern Pacific was begun under the Anti-Trust Act in 1914 before the passage of the Railway Transportation Act of 1920, and this last-named Act was not considered in the decision, of course, because no action of the commission had yet

been taken except to serve on the carriers its tentative plan for the consolidation of the various systems under which the Central Pacific was consolidated by the commission with the Southern Pacific.

Until a final conclusion is reached by the commission, nothing permanent as to the relations of the Central Pacific and Southern Pacific can be determined. No other railroad could buy the property without the consent of the Interstate Commerce Commission under the law. The commission has large powers over questions of joint use of terminals and the like. It is the policy of the United States as declared by the Transportation Act of 1920, to arrange for the consolidation of the railroads of the country into a limited number of large systems, and manifestly the Central Pacific in the end must belong to one of these.

If the application be granted by the Interstate Commerce Commission, it simply means, therefore, that there will be no disruption until the question is finally and definitely determined as to where the Central Pacific shall go.

As an outgrowth of the war, American business has been elevated to a dominant position in international commerce and the time has passed when the American business man can ignore the

Commerce Bureau rest of the world. We are offered
Extends Service the opportunity of taking full ad-
by Radio vantage of our new pre-eminence

in world trade and unrestricted markets, or, we may confine our outlook to our own country and a restricted market. The elements of stability and instability in our domestic commercial relations cannot now be logically considered except in relation to movements abroad.

The business interests of the Pacific and Rocky Mountain States to a great extent, are not aware of the valuable service they may obtain free of any charges from the United States Bureau of Foreign and Domestic Commerce, the District Office of which is maintained in the Customhouse, San Francisco.

In cooperation with the Mercantile Trust Company, of San Francisco, the Bureau is inaugurating the very latest in radio-phone commercial service. It will assist American firms by broadcasting, at regular intervals, information concerning overseas markets, commercial conditions in foreign countries, foreign competition and how to meet it, sources of supply, particularly of raw materials, foreign tariffs and customs regulating foreign demands for specific

American products, and warnings regarding impending financial or economic disturbances abroad. The Bureau of Foreign and Domestic Commerce is solely a service branch of the United States Government, and it is its desire to offer the business interests of this District a pertinent, specific, up-to-the-minute commercial service,—or, in other words, a “Dollars and Cents” service.

The Bureau is suggesting to commercial organizations the desirability of installing radio-phone receiving sets in their headquarters, in order that their members may receive the full benefits of the radio-phone service of the Bureau. A trader's success depends on his knowledge of markets and his ability to forecast trade conditions tomorrow.

Attended by crowds of interested men and women, a Complete Homes Exposition was recently opened to the public in Lakeshore Highlands, Oakland, Calif. It continued for three weeks, during which time the ten model homes were opened for inspection, and lectures and entertainment given on various aspects of home building, home financing and home decorating and furnishing. Each of the ten homes was outfitted to the last detail, each garden was complete and each place ready for immediate occupancy.

The homes in the exhibit were furnished completely so the prospective homebuilder could judge just what effects are possible, just what comforts and conveniences of construction and outfitting could be made in a home designed with skill and foresight and beauty and furnished with comfort and charm.

The ten homes ranged through a wide variety in cost and design, but each was expressive of the best result that can be obtained for the outlay.

In the group were two handsome homes of the Northern Italian type, two typical Spanish bungalows, two modified Spanish, or California bungalows, two modified English cottages of story and a half construction, a hollow tile and brick house, and an all-redwood bungalow.

In each home was an outfit of furniture and furnishings adapted to the place. The Electric Club of Oakland equipped one of the bungalows with a most complete collection of electrical devices to illustrate how electricity may serve in every room.

Each day during the exposition there were free lectures or demonstrations on home making or some aspect of household arts.

No utility can arbitrarily discontinue its service and withdraw property voluntarily dedicated to a public use, the California State Railroad Commission has declared in a decision written by Commissioner Chester H. Rowell ordering the San Diego Electric Railway Company to immediately restore service in Adams Avenue, in the city served by that company. As the result of a dispute with city authorities over paving, the

company had torn up about three-quarters of a mile of single line trackage. At the hearing an agreement was reached between the city, the traction company and the commission by the terms of which the company not only agreed to restore service but to double track and extend the line. The city has relieved the company of paying its right-of-way.

Commenting on the arrangement the commission says:

“It is apparent therefore, that through the co-operation of the city officials and of the company, it has been made possible to secure at an early date a new double track line on Adams Avenue in lieu of the former single track line, which, according to the evidence, had become wholly inadequate for the transportation needs of the eight or ten thousand people residing in the district traversed by it.”

While the order issued by the commission deals specifically with a railway transportation problem, it applies to the discontinuance of any utility service.

The order of the Department of Public Works of Washington fixing a schedule of non-discriminatory rates on logs moving interstate, resulting in a reduction of gross return to the Log Shippers Win Important Case Against Railroads railroads estimated at \$500,000 annually, was affirmed in the Superior Court of that state. The judge has had the case under advisement since June, the railroads continuing to assess the old rates under supersedeas bonds posted with the court.

The Department ordered a year's trial of its rate schedule and of the rules it dealt with, fixing minimum carloads and advocating the use of patented log bunks by requiring the railroads to stake flat cars not bunk equipped and establishing a rate differential in favor of bunked cars, obviating the cutting of stakes in unloading, both as a safety measure and as a means of expediting unloading. The decision in the Superior Court upholds all of these findings of the Department's order.

Unless the railroads determine at once upon a further appeal of the case they will be required to begin paying reparations on over-charges from the effective date of the Department's order, Feb. 21, 1921. If finally affirmed, the lower log rates will enable Northwest fir lumber to compete more successfully with southern pine in the Chicago and middle western markets, the reduction in log rates meaning a lower cost of logs to the mills with a resultant lower cost of manufactured lumber.

RADIO BULLETINS

The Journal of Electricity and Western Industry broadcasts a special industrial and business news report each Monday night at 7:30 o'clock from San Francisco. This report is broadcasted from station KLP, operated by the Colin B. Kennedy Company at Los Altos, California, on a wave length of 360 meters.

DISCUSSION



Golf and the Engineer

To the Editor:

Sir: In a recent issue of your valuable journal you refer to a letter addressed by Mr. Elbert H. Gary, chairman of the United States Steel Corporation, to his branch managers. In that letter Judge Gary suggests to these gentlemen the propriety of sparing a few minutes each day from their golf for the purpose of assisting him in making a little money for the corporation. Whereupon you remark: "What is a mere contract compared to a perfectly executed mashie approach?" That is a question worthy of deliberate debate. When all is said and done a mere contract may be broken, whereas a perfect mashie shot is a joy forever! Moreover, I have good reason for believing that you speak feelingly, for you—excuse me—are said to make eminently satisfactory contracts more frequently than you make perfectly executed mashie approaches, therefore it is only natural that you should appraise them in accord with the inexorable law of supply and demand. In more serious vein, you observe: "Really, isn't this golfing idea just a bit overdone?" We think it is. Let us confess it manfully and look Judge Gary—and the rest of the world—unblinkingly in the face. One can have too much of a good thing, whether it be milk or whisky. A proverb says, "All work and no play makes Jack a dull boy," but the proverb, like others, has its corollary, which is equally true: "All play and no work makes Jack a poor boy." In this matter, as in most of the affairs of life, a happy medium and a sane compromise is desirable. You and I have known young men that were so devoted to their golf—and their dominoes after luncheon—that they allowed the procession of life to pass while they were playing skittles in an alley, as it were. We have known others that kept their noses so closely to the grindstone that they missed the perfume of the rose. In truth, I had supposed that intensity of aim as expressed by close application to business was a mark of the young American. In other lands, of course, there were—I understood—young men showing similar singleness of purpose, but the concentration of effort I accepted as the characteristic of our own young countrymen. On the other hand, I had accepted the young Englishman as the type of those who are devoted to outdoor sports, to the neglect sometimes of more serious affairs; moreover, in his sports, I believed, the Englishman showed a keen appreciation of the spirit of the game, whereas the young American, it seemed, brought a businesslike intensity even to his pastimes, and so robbed them of some of their joyousness. I have noted, for example, when visiting a large mine, that when the day's duties are done the

young Englishmen on the staff drop readily into talk on golf or polo while the young American technicians discuss the origin of an ore deposit or the development of the flotation process. It is said that at forty a man is either his own doctor and philosopher or a fool; indeed, if he be observant he may become something of a philosopher even earlier. Many people only arrive at an inductive philosophy of life by the time it is too late to make use of it for themselves; it becomes too retrospective to be serviceable; it has lost its prospective value.

The wise man profits by the experience of others, by experience at second-hand, gathered by such powers of observation as every scientific man ought to possess. For example, he can see that intense application to his task makes the American efficient as an engineer at an early age, but that unremitting devotion to work, especially if it be for the purpose of making money, will atrophy the cultural sensibilities that mark an educated man and deaden the humane interest in life that is the chief preservative of a youthful spirit. A man is old when he has ceased to be interested in others and their affairs. Again, one can see how the young Englishman, too devoted to sports, loses his place in the competition of life and misses his chance in the scramble for wealth, but, unless he has carried the fondness for sports so far as to sacrifice his career, he grows old without losing touch with the culture that gave charm to his youth or the wide human interests that warmed his heart in the days of his maturity. A sane compromise, I repeat, is necessary if one is to obtain the just balance that makes life successful. The wise man "sees life sanely, sees it whole." As for golf, in particular, I venture to suggest that although it may not be a game for old men only, it is a dangerous pastime for the young man on the threshold of a career, because it is so extravagant of time. A good game of tennis can be played in an hour; a swim needs only half that time; a round of golf consumes two or three hours—in effect, half a day. And when a fellow begins to make dreamlike drives and insidious approaches, he will not be content with 18 holes—his unit becomes 36 holes, or a whole day's golf. Next he enters competitions, which last for four or five days or even a week, depending on his success. That way lies disaster to a career as mining engineer, metallurgist, or geologist. To succeed in these the young man, to borrow a simile from the game we are discussing, must keep his eye on the ball—he must have singleness of purpose. He must learn to approach as well as to drive; mere strength will not suffice; there is needed a delicacy of touch in golf as there is required a refinement of tact in an engineer's dealings with those with whom

or for whom he works. The perfectly executed mashie approach has its counterpart in the doings—for example—of the branch managers to whom Judge Gary addressed his sarcastic note. Indeed, the experienced golfer knows that a successful approach is the most valuable shot in his bag, because it is a saver of other shots—the putts that follow. In golf, as in life, we see men make a grand start, by means of a tremendous drive in the game or remarkable abilities in the profession, and yet make a miserable score by the time they drop the ball into the last hole or are carried themselves to the nineteenth hole—the prospect-hole that ends their prospects on earth. Steadiness is needed in life as in the game; so is the good temper that enables a man to face trouble with a firm grasp on a stout niblick. I am reminded of the Scottish bishop who was playing at St. Andrews and drove his aberrant ball into a particularly bad bunker nicknamed 'Hell.' He took his niblick and with a deft stroke played the ball not only out of the sand but onto the green. The caddy remarked: "I'll be thinking, beeshup, ye had better be taaking yer neeblick with ye when ye dee."

San Francisco, Oct. 6.

T. A. RICKARD.

The National Meeting of Local Electrical Leagues in Retrospect

To the Editor:

Sir: I am very glad indeed to comply with your request and give you my impression of the meeting at Association Island, which was started by the Society for Electrical Development and carried through by them with the hearty cooperation of all of the electrical leagues and associations in the United States.

The Society for Electrical Development as now headed by W. W. Freeman and W. L. Goodwin, conceived the idea that there should be a concerted effort in developing the electrical club movement in every community of the United States. In order to get this movement started and at the same time receive an expression from the now existing leagues, clubs and associations, the Society invited all of the organizations now existing to be present at a meeting at Association Island from Sept. 5 to 7.

They also invited representatives from the leading manufacturers, central stations, jobbers and contractor-dealer associations, so that there were gathered at Association Island some 200 men representing the different branches of the industry.

The fact that the meeting was successful was evidenced by the full attendance at each session of all of the representatives of the different organizations and the active interest that each man took in presenting his own case and in entering into the discussion of points of interest which might arise.

The last session was given over to the summing up of facts presented during the session, and these particular facts I believe could be outlined as follows:

1. That there was an active need for an electrical club, league, or association in every community of the United States. This thought was emphasized by the fact that where there were electrical leagues, clubs or associations, the industry was going forward at a more rapid rate and in better form than in communities where there were no such organizations.

2. That an effort be made at once to organize a club in every community where there was not some organization now existing to take care of this need.

3. That the central station representative in the district, being one of the more permanent men of that district, should take a prominent lead in such organization.

4. That as a suggestion for the formation of clubs, they could be built up around either an electrical home, a wiring or merchandising campaign, an electrical exposition, or purely on a social gathering basis.

5. That individual dues to this organization be very low, in order that the organization may be as democratic as is possible.

6. That if this organization is entering the commercial field—as an illustration, doing work similar to our California Cooperative Campaign—that this work should be financed entirely by the interest benefiting from this organization work. That the central station should carry a large percentage of this burden. That the manufacturer, jobber and dealer should divide the balance of the expense.

7. Inasmuch as electrical shows were becoming very common throughout the United States, and that the national manufacturers were continually being solicited for funds to assist in the promotion of such shows, it was unanimously expressed that this policy was not advisable and that all local electrical expositions should be financed purely by the locality in which these expositions were held. Many good and excellent reasons were presented as to why this was the most logical method of handling this work.

8. In the social and luncheon gatherings of clubs or associations, it was generally conceded that the program should be varied so that they would not be either too technical or deal too much on a popular subject, but should be so laid out that the organization could keep interest stimulated in its activities.

9. Inasmuch as the Society for Electrical Development now has an organization and set-up, which will enable it to take over the work of creating electrical clubs in districts which are not now organized; that this organization take up this extremely important work and assist the central station representatives of the interested districts to properly form a going organization; that the Society for Electrical Development also act as a clearing house for the now existing leagues, clubs and associations for information which might prove of value to the different organizations.

The above points cover in a general way the high lights in this meeting.

I believe that the meeting at Association Island will prove of great benefit to the electrical industry, inasmuch as it brought together men interested in the same character of work from all over the entire United States. It has started a movement which should ultimately result in a chain of clubs or leagues reaching from the Atlantic to the Pacific Coast.

That the meeting was a success appealed to me particularly by the extreme interest shown by every man sent there as a delegate.

R. A. BALZARI,

Manager Industrial Division,

Westinghouse Electric & Mfg. Company.

San Francisco, Calif.

Oct. 10, 1922.



THE California Oregon Power Company distributes electric energy over a wide and sparsely settled territory in northern California and southern Oregon, mountainous in character but with several fertile and extensive valleys. While population in the territory served by this company increased but 20 per cent from 1916 to 1921, the number of consumers increased 31 per cent, and connected load 153 per cent.

The inset picture shows the interior of the Copco power plant on the Klamath River, where on Nov. 5, a similar unit of 12,500-kw. capacity will be put in operation to meet increased demands. Fertile valleys, similar to the one shown above in the shadow of Mount Shasta, are made to yield their wealth by electric pumping. The agricultural load of this company has increased 500 per cent in five years.

Use of Radio Telephones by Western Power Companies

By R. C. Denny

THERE is on the market at present a great variety of radio transmitting and receiving apparatus, both for radio telegraphy and radio telephony. While designed primarily for amateur use, it is quite adaptable to limited commercial purposes; that is, the transmitting apparatus is of adequate power rating and the receiving sets of ample sensitivity and wave length range to meet the requirements of power company operations. It is only necessary, then, to make the proper selection of apparatus and connect it up for operation. The apparatus comprising a complete transmitting and receiving set may be conveniently grouped together on any ordinary desk, and yet leave ample space for writing. The power requirements rarely need exceed 1 kw., which is generally readily available through the arc of the 110-volt alternating current lighting circuit. The location of the radio apparatus might be somewhat influenced by the aerial requirements of the antenna or radiating system. It need not, however, as an ingenious installer can fashion an effective antenna in almost any location. The radio, if for emergency system operation, properly belongs in the dispatcher's office, but if used for construction purposes might be located at the most convenient point.

The Type of Apparatus to Be Used

In the choice of a radio system and the apparatus to be used, there are several important considerations. There are the damped and undamped, or continuous wave systems of radio; the one adapted to telegraphy only and the other to both telegraphy and telephony. The damped or spark system of radio telegraphy, while still in general use, is rapidly giving way to the continuous wave or undamped system. There are several good reasons for this, that might well be brought out as having an important bearing on other phases of the radio situation. The principal objection to the spark system of transmission is that it is so susceptible to "static" or atmospheric disturbances, requiring at times greatly increased power to work over a given distance. It is not particularly subject to sharp tuning except at great sacrifice of power, which spells inefficiency at the very outset. Other objections are that the spark is very noisy in operation and the oscillations produced, being of audio frequency, cause considerable inductive interference to telephone lines in the immediate vicinity. This system, however, in spite of the foregoing objections, has several things in its favor. The apparatus involved is of moderate cost and being of rather rugged construction requires little or no maintenance expense. Furthermore, the apparatus

is not critical of adjustment and neither is it hedged about by patent rights.

The spark telegraph is very applicable to certain requirements of power companies, such as for working in connection with construction projects. The set shown in the accompanying photograph is an

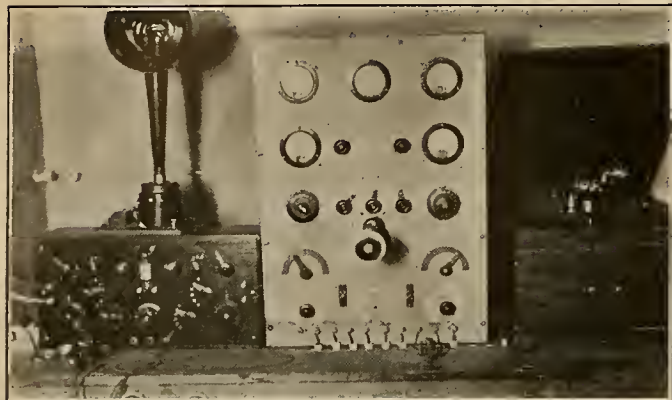


Radio station at Camp 61 of the Southern California Edison Company, showing how two pine trees have been used as masts for the antenna. This station is at an elevation of 7,100 ft. and although the operating radius is only 25 miles, a radiation of 2 amp. is necessary on account of the topographical conditions.

actual working installation, that was used by the San Joaquin Light & Power Corporation in connection with the construction of a hydroelectric plant at the mouth of the Kern Canyon, 120 miles distant from headquarters. It proved absolutely reliable in the rapid exchange of messages over that distance of valley and foothill country, from January till September. The installation costs and operating expenses were considerably less than the charges would have been for long distance telephone calls and telegrams, had those means of communication been available; in fact, it paid for itself four times over, to say nothing of the great convenience of the thing. At the construction camp the reception of press news

was rather a boon to the men, in keeping in touch with the outside world.

For three years prior to the World War the Northwestern Electric Company had been carrying on experiments with the spark telegraph between



The experimental radio telephone outfit used by the San Joaquin Light & Power Corporation in conducting their tests. The entire apparatus was made from the stock of the company.

Portland and their main generating station, a distance of 65 miles. They made some use of it in connection with their load dispatching between those points and in this field they are undoubtedly pioneers. Their operations were suspended during the war and have never been resumed. At the present time, however, they are experimenting with the radio telephone, but are having some difficulty with low power sets owing possibly to the presence of ore deposits in the vicinity of the plant.

Just prior to the war, the Montana Power Company had established spark telegraph communication between three of their important operating points in Montana and were making good headway with their experiments when they were closed down by the government. Their experiments have never been resumed owing to the interference from a 100,000-volt d.c. Cottrell smoke treating plant in the vicinity of Butte. They expect to begin experimenting with the radio telephone in the near future.

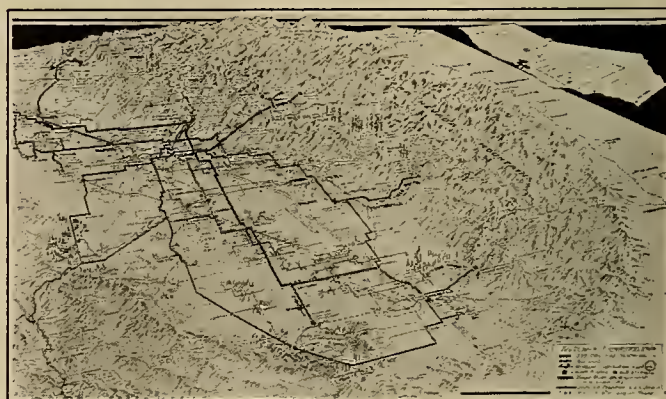
Southern Sierras Power Company engineers were experimenting with the spark telegraph just prior to the war for operation between San Bernardino and Bishop, when they too, were shut down. They have not resumed the telegraphic experiments but rather, are interested in the radio telephone, which they will likely take up in an experimental way quite soon.

The experience of Southern California Edison Company engineers with radio in the Sierras has very conclusively proved the superiority of the undamped or continuous wave telegraph over the spark or damped, for consistent work in the rugged mountains. They operate three continuous-wave sets there among their construction camps in the vicinity of Huntington Lake, above Cascada; the operating distances being 8, 14 and 25 miles. Although the distances are not great, the topographical conditions are such, that approximately twenty-five times more power is required to get through than would be required at sea level. Furthermore, they find that a

radiation of 2 amp. from a continuous wave set gives very good results while a radiation of 8 or 10 amp. from a spark set gave only poor results. In the case of the continuous wave system there does not seem to be the absorption and deflection as with the waves of the damped system. The very great use they are making of this as a routine means of communication is at once apparent on knowing that in a typical month's operation they telegraph 121,000 words between headquarters and camps.

The fact that the operation of undamped transmitting sets is absolutely noiseless and causes no local inductive interference to telephone lines makes it very desirable for use in the headquarters office of the construction department or dispatcher's office, as the case might be. The apparatus comprising a continuous wave transmitting set requires about the same space for installation as a spark set and may be operated from the 110-volt a.c. lighting circuit. The great advantage that this transmission has over the spark method is that it permits of extremely sharp tuning, with no resulting loss of efficiency; consequently, great distances may be covered with very low power input and with little or no interference caused to other stations in the near vicinity. Conversely, the reception of continuous wave signals is not subject to much interference from other stations or atmospherics, as in the case of spark reception.

Another reason for the popularity of the continuous wave transmission is that it is adapted to telephony, with slight modifications of apparatus.



An idea of the territory served by a large power company may be obtained from this map of the system of the San Joaquin Light & Power Corporation. Radio can be used here to send messages from the farthest parts of the line, in the high Sierra Nevada Mountains, to the substations, only a few miles from the ocean.

Naturally it is a decided advantage to have the telegraph and telephone combined in one set and at one price. For the foregoing reasons there is no doubt but that this is the best all-round method of radio communication, even though the first cost and maintenance costs are somewhat higher than for spark apparatus.

The chief obstacle standing in the way of the radio telephone for limited commercial use such as by the power companies is the patent situation. The manufacture and sale of tubes and other parts essential in the construction of radio phone sets is prac-

tically controlled by one company. This apparatus at the present time is licensed only for amateur and experimental use, but it is understood that the limited commercial situation will be taken care of in the near future, which is certainly to be desired. For the present, then, the most that the power companies can do along this line, is to build up experimental sets and proceed with testing operations about their systems. In this manner the practicability of the thing may be determined without great expense.

Although broadcasting operations on the Pacific Coast and the operation of the Avalon-Long Beach commercial radio phones have pretty well established the feasibility of the phone for power company operations, there remain problems of the individual systems that can only be solved by actual experimentation. One great problem for all radio phone experimenters is that of ringing or signalling and the rapid two-way communication. This has been accomplished by the Bell Telephone Company, due principally to the feasibility of loop reception over the rather short distance that they operate. Their conversations have, however, been picked up by the writer at a distance of 240 miles on a loop antenna, employing a shop made detector and tuner unit with two steps of amplification. This indicates that the possibilities of loop reception for considerable distances are good. This would greatly facilitate back and forth working, as slightly different wave lengths could be used by the two stations so that the transmitting wave at one station would not interfere with reception at the same station. Then with the sensitive radio relay that lately has been put upon the market, ringing over considerable distances might be accomplished also.

Central Station Experiments

The San Joaquin Light & Power Corporation of Fresno, Calif., recently built up an experimental radio telephone, with the idea of developing it as an emergency means of communication, principally for dispatching when the private telephone lines fail. To facilitate testing operations over the entire system, they are broadcasting three phonograph concerts each week from Fresno, primarily to get reports on the constant operation of the set and secondarily to afford their consumers and employees about the San Joaquin Valley entertainment. Results so far have been very encouraging and as soon as several more parts are available the operation will be very much improved.

The ideal radio telephone for power station use and for the dispatcher's office is one that requires just as few adjustments as possible. It must operate from the 110-volt a.c. supply, by the simple closing of a switch and oscillate persistently, with no more adjustment, for any variations in supply voltage, than can be secured through the use of the filament rheostats. There should be no rotating machinery to require attention; nothing for the operator to do but start the set, talk and make occasional replacement of burned-out tubes. This is just the sort of set that the San Joaquin Company is developing. It well behooves the power companies to forward

such experimentation in their own behalf, as the manufacturers are too busy supplying the amateur and novice with apparatus to give much thought to the development of the radio telephone for commercial purposes.

Road Will Aid Power Development

AS a result of four years of work on the part of the Bureau of Public Roads of the federal government, the new Klamath River road from Happy Camp, Calif., to Orleans, Calif., will be completed within the next few days and will immediately be opened to the public. The road is about 50 miles long and follows down the rugged canyon of the Klamath River, one of the remaining undeveloped regions of California.

In addition to furnishing a good dirt road which will connect the Sacramento Valley with the coast country by means of a scenic highway, this new development will lay open, to power companies of northern California, a great river which can be utilized in the creation of hydroelectric power. According to the acting district engineer of the California



One of the side streams entering the Klamath River, in northern California. The main river is said to be capable of developing 500,000 hp. of electrical energy by means of low-head hydroelectric plants. A preliminary permit for the development of 120,000 hp. has already been granted.

District of the United States Forest Service, no detailed studies of the resources present on the Klamath River have been made, but he estimates that it would be possible to develop about 500,000 hp. in the region.

The California Oregon Power Company of Medford, Ore., has already been granted a preliminary permit, extending over a period of two years, for a large development on the Klamath. It has been estimated that 120,000 hp. will be developed by the company at a plant which will be installed at a point near the junction of the Salmon and Klamath rivers.

The entire stretch of the river down through the long canyon to tidewater offers excellent opportunities for the development of power by low head plants. The new road will undoubtedly play a vital part in this development.

Analysis of Customer Ownership of Western Power Companies

LOCAL ownership of stocks and bonds of public utility companies by their customers constitutes a real public ownership—in fact, the only kind of public ownership that will be effective under a democratic government so long as human nature remains what it is. This fact, coupled with the realization that the responsibility of serving a community involves the preparation of a farsighted plan of finance, in order that the present rate of growth may be maintained and the properties may be sufficiently resourceful to supply the growing needs of the communities in which they operate, has been the motive of the customer ownership campaigns of the western power companies.

A survey conducted by the Journal of Electricity and Western Industry, in which thirty of the utility companies of the West were questioned regarding their customer ownership plans, shows that the chief benefits which have accrued from this policy of public partnership, aside from securing large amounts of new capital and opening a new field for the absorption of a tremendous volume of future securities, may be summed up as follows:

(1) Such a campaign assures the good will of a large number of local investors, whose self-interest in the affairs of the utility not only inclines them to adopt a favorable attitude toward it, but also tends to spread this good will through the community at large.

(2) The popularity of the company's securities is increased with bankers and professional investors, who realize that the possession by a utility of a large local following, implies that the company enjoys the confidence of the public in the territory which it serves.

(3) The arguments of the advocates of municipal ownership are nullified because the statement that a large proportion of the money collected by the utility is lost to the community in the payment of interest and dividends to investors in other parts of the country no longer holds true.

(4) It encourages thrift, creates a new class of investors and increases the efficiency and loyalty of employes by leading them, through their efforts to sell stock, to inform themselves more fully of the company's affairs and to form a broader conception of its operations.

Of the thirty companies questioned in the survey nineteen have disposed of securities by the employment of customer ownership campaigns. One utility, the Colorado Power Company, is formulating plans for such a campaign at the present time and expects stock sales to be under way by Jan. 1, 1923. Five companies have staged no campaigns and five small utilities operating in isolated districts failed to

reply, it being implied that their operations were such that a policy of customer ownership was deemed unnecessary. Of the five companies whose financing plans have not led them to adopt this method of disposing of securities, the Montana Power Company and the British Columbia Electric Railway, Ltd., are the most important. The former is controlled exclu-

PACIFIC GAS AND ELECTRIC CO.
 A California Corporation — Owned and managed by Californians and built up by California Capital for Service to Northern and Central California —

NUMBER OF STOCKHOLDERS
 As of June 3, 1914 — 2898
 Added in 1914 — 1230 Added in 1920 — 5207
 Added in 1915 — 2952 Added in 1921 — 4184
 Added in war period — 1733 Added in 1922 — 4364 (last month)

TOTAL STOCKHOLDERS SEPT. 15th 1922 — 22,568

EVERY DOT A STOCKHOLDER

As of June 3, 1914	Added in 1914	Added in 1915	Added in war period	Added in 1920	Added in 1921	Added through 1922

You are cordially invited to join this large family of P.G.&E. stockholders and become associated with some of the soundest judges of investment values in California. Become a builder of Northern and Central California by becoming a stockholder.

FIRST PREFERRED 6% STOCK NOW ON SALE
PRICE \$90.00 PER SHARE TO YIELD 6 ²/₃ %

The public is given an idea of the customer ownership activities of the Pacific Gas & Electric Company by means of this chart which is displayed in the window of the main offices in San Francisco.

sively by eastern capital and the securities of the latter are owned in London.

It is of importance to note that practically all of the utilities which have adopted the procedure of taking the public into partnership have confined their activities to the disposal of junior securities—i. e., either common or preferred stock—in small amounts.

While it would appear from the compilation of the results of the survey that the population of the territory served by the nineteen companies which have adopted this broad method of financing is in excess of 8,850,000, when allowance is made for the duplication in the cases of the Pacific Gas & Electric Company and the Great Western Power Company, the Southern California Edison Company and the Los Angeles Gas & Electric Company, and the Portland Railway, Light & Power Company and the Northwestern Electric Company, this figure is reduced to an approximate total of 6,500,000. The total number of customers is slightly less than 1,760,000, indicating a ratio for the West of approximately one customer to each 3.7 of population. The total num-

ber of stockholders at the present time is 95,787 or a ratio of approximately one stockholder to 18 customers and one to each 70 of population.

Stockholders Increase Ten Times

Through the customer ownership plan the number of stockholders has been increased more than ten times in the territory served, the survey indicating that these activities have brought 86,937 new security holders. In acquiring this number of new partners in the business they have sold 1,094,773 shares of stock or almost thirteen shares per stockholder. While this average may seem high in view of individual reports, which would indicate that the usual block of stock purchased seldom exceeds five shares, it must be remembered that the customer ownership campaigns have been under way a sufficient length of time to allow the companies to sell the same people twice or more.

A study of the results from the survey emphasizes the latent possibilities of the market for securities which has been opened up by the customer ownership plan. One stockholder to eighteen consumers is a seemingly small ratio. From the standpoint of arousing a sympathetic understanding in the customers by getting them to take a pecuniary interest in the business, there is much to be done. However, it must be remembered that the type of people who save and become property owners are the dominant class who have many friends and much influence in a community.

P. G. & E. Is Pioneer

The Pacific Gas & Electric Company, starting its customer ownership campaign in June, 1914, stands as the pioneer among utility companies of the country in adopting this policy. It was not until May, 1916, that another western company, the San Diego Consolidated Gas & Electric Company, entered this field. In the eight years the campaign has been functioning, the Pacific Gas & Electric Company has disposed of 349,913 shares of stock, conservatively estimated to be worth more than \$30,000,000. Approximately 18,500 shareholders have been added. The campaign was launched shortly before the opening of the world war and the resultant upheaval in investment markets. No efforts were made to sell stock during the Liberty Loan drives. The company had no precedent to follow. Yet despite these difficulties, the company has established an enviable record.

In the number of stockholders added by means of a customer ownership campaign, the Southern California Edison Company has had remarkable success. Since June, 1917, a total of 46,200 stockholders has been added and 357,379 shares of stock sold. During one week in June, 1922, more than two and a half million shares of Edison common stock were sold and 11,000 shareholders added. This particular drive was put over as a compliment to John B. Miller, president of the company, and was named "John B. Miller Week."

An idea of the success attendant upon the customer ownership operations of the western power

companies can be gained by a comparison of the results achieved to date with those of one of the eastern utilities which has been following the same policy. The Commonwealth Edison Company, popularly known as the largest utility in the world, started its campaign in November, 1919. To date this company has sold 127,000 shares of stock to approximately 25,000 stockholders. This does not include 3,000 potential stockholders who are buying stock on the partial payment plan. The company has approximately \$60,000,000 in stock outstanding at the present time. It serves a population of 2,635,000 and has 477,714 consumers.

Sales Methods Employed

The methods employed in selling the stock have largely been the same in all companies. Employees were organized into teams, quotas allotted and prizes given to teams and individuals making the best records. Commissions were paid on each sale, depending



Part of the \$2,400,000 worth of common stock sold to 11,000 new stockholders during "John B. Miller Week" in June, 1922.

upon the amount of stock sold. Stock sales departments have been maintained, the members of which do not devote all of their time to selling stock, but who circulate among the various divisions and districts supervising the work and giving instruction to the employees.

All of the companies have used advertisements to considerable advantage. Experience has proven that the employment of printers' ink is almost indispensable. Newspapers published in the fields covered by the company were the chief mediums used. Literature has been enclosed with monthly bills, and mailing lists comprised of names taken from the company's accounts have been circularized. Paid advertising has also been supplemented in many cases by news matter, containing favorable comment on the stock selling operations of the companies.

The plan of allowing deferred payments has met with considerable success, and has been almost universally included in all customer ownership campaigns. From the standpoint of securing subscrip-

DATA ON CUSTOMER OWNERSHIP

Name of Company	Population of Territory Served	Number of Customers	Date Started	Number of Shares Sold to Date	Number of Shareholders Added	Total Number of Stockholders Now	Total Stock Outstanding	Number Stockholders Holding 100 Shares or Less	Proportion of Stock Held by Small Shareholders (100 Shares or Less)
The California-Oregon Power Company.....	77,663	13,211	June, 1922	2,576	389*	689	\$ 6,661,100	513	20%
Central Arizona Gas & Electric Company.....	40,000	13,768	Nov., 1921	1,002	136	260	1,268,600	230	.....
Coast Valleys Gas & Electric Company.....	25,000	11,402	Jan., 1922	4,376	88	89	3,437,600	87	25
Denver Gas & Electric Light Company*.....	300,000	58,426	Feb., 1917	11,762	633	633	11,176,200	615	83
Dixie Power Co.....	12,000	1,281	1918	721	198	209	224,150	204	36.5
Great Western Power Company*.....	1,350,000	35,607	Aug., 1919	47,850	2,532	2,656	4,778,684	2,613	79
Idaho Power Company*.....	150,000	37,378	Feb., 1918	9,177	625	625	1,293,500	617	67.3
Los Angeles Gas & Electric Company.....	940,000	272,257	Feb., 1921	160,586	4,425	4,436	14,464,100	4,352	.....
Northwestern Electric Company.....	273,000	16,014	July, 1921	8,029	855	1,378	12,558,900	1,268	79
Pacific Gas & Electric Company*.....	1,800,000	622,312†	June, 1914	349,913	18,500	19,712	49,649,210	18,726	.....
Pacific Power & Light Company.....	140,000	50,636	Dec., 1917	11,847	806	999	10,092,200	990	86
Portland Railway, Light & Power Company.....	331,000	61,426	Jan., 1922	6,113*	2,525*	3,260	23,110,300	3,051	14.4
Puget Sound Power & Light Company*.....	578,400	59,800	Mar., 1922	2,859a	1,200a	.....	19,352,300	.....	99a
San Diego Con. Gas & Electric Company.....	98,700	G 30,828 E 32,155	May, 1916	32,148	1,702	1,703	6,169,800	1,684	70.8
San Joaquin Light & Power Corporation.....	350,000	47,480	Feb., 1920	66,651	2,922	3,388	24,165,100	3,211	28
Southern California Edison Company.....	1,500,000	183,906b	June, 1917	357,379	46,200	48,000	50,480,272	47,000	90
Utah Power & Light Company*.....	360,748	80,772	Oct., 1916	11,853	2,271	4,909	11,595,400	4,815	98.1
Washington Water Power Company.....	148,798	39,594	.....	.....	.....	1,909	16,933,800	1,619	24.3
Western States Gas & Electric Company*.....	110,500	G 12,114 E 30,298	Feb., 1918	9,931	930	932	3,148,000	924	30
TOTAL.....	8,858,807	1,759,890		1,094,773	86,937	95,787	\$259,383,016	92,519	

*Preferred stock only.
G Gas customers.
E Electric customers.
a City of Seattle only.

tions from persons who are unwilling, or unable to make payment in full at the time of subscription, it has proven most desirable. Companies report that from 20 to 40 per cent of the stock sold has been purchased under this plan.

Cost of Selling Small

Some inkling as to the cost of placing this quantity of stock in the hands of consumers may be gained from the records of two of the companies. The Pacific Gas & Electric Company has expended 92.7 cents per share, divided as follows: commissions (confined solely to employees in recent years), 43 cents; advertising, 21.7 cents; printing, paper and postage, 15 cents; stock sales department, 11.8 cents; special solicitors, 1.2 cents. The stock sold by the Southern California Edison Company has cost that company \$1.05 per share for its disposal. It is believed that these figures constitute a fair average for all of the western power companies who have undertaken the sale of stock to consumers.

The wide distribution of stock in a community is best illustrated by an occupational classification of stockholders for one of the districts served by the Pacific Gas & Electric Company. Thirty-eight per cent of the total are women and housewives constitute the largest individual class. This fact proves the contention that women form a group of prospective stockholders which can well be cultivated. The classification of stockholders follows:

Accountants	19	Laborers	18
Apt. House Owners	4	Lawyers	9
Artists	3	Laundry Owners	3
Bankers	6	Letter Carrier	1
Barber	1	Librarians	2
Bartenders	2	Lumbermen	4
Blacksmith	1	Manufacturers	7
Brokers	4	Mariners	11
Business men	6	Mechanics	26
Butchers	5	Merchants	59
Capitalists	6	Medium	1
Capt. in Army	1	Miners	6
Carpenters	20	Minors	7
Cashiers	4	Misc. Agents	9
Chauffeurs	2	Motormen, conductors	10
Cigar Makers	3	Musicians	2
Clerks	52	Music Teachers	4
Clergymen	8	Newsboy	1
Cobblers	2	Newspaperman	1
Contractors	7	Nurses	9
Cooks	3	Oil Operators	9
Dentists	3	Post Mistress	1
Doctors	13	Pool Room Proprietor	1
Draughtsman	1	Printers	3
Dressmakers	5	Professors at U. C.	3
Druggists	5	Ranchers	45
Editors	2	Real Estate Agents	4
Electricians	9	Restaurant Owners	3
Elevatorman	1	Retired	164
Engineers	36	Salesladies	4
Executives	24	Salesmen	29
Firemen	3	Scientist	1
Florist	1	Sexton	1
Gardeners	2	Stenographers	26
Geologists	2	Students	9
Grocers	16	Surveyors	4
Hotel men	3	Tax Collector	1
Housekeepers	91	Teachers	44
Housewives	319	Teamsters	5
Ins. Agents	12	Telephone Operator	1
Janitors	5	Undertakers	2
Jewelers	7	Waiters, Bus men	38
Total			1,307
Company Employees			276
Total			1,583

Further data on the distribution of the stock are brought out in the survey, which shows that the majority of the stockholders possess less than 100 shares. In many companies practically all of the stock is held by small shareholders. This is especially true of the smaller utilities.

The survey shows that in some companies as much as eighty per cent of the stock is held in blocks of 100 shares or less.

Important Utility Policy

There can be no doubt as to the important role which the customer ownership policy has assumed in the affairs of the western power companies. By the fullest possible exposition of their financial and physical condition, their problems and policies, and their present and future prospects, these companies have secured and are maintaining the active interest and cooperation, not only of a large body of stockholders, but of the various communities which they serve. No better illustration of the importance of customer ownership can be given than a quotation

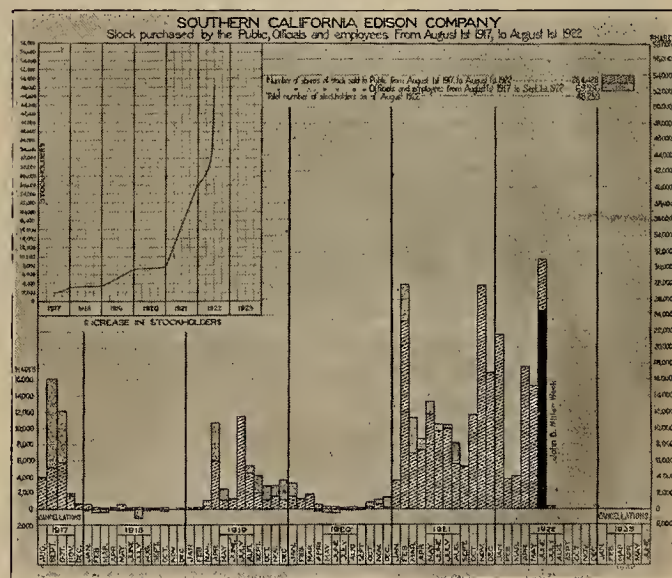


Chart showing the growth of the customer ownership campaign of the Southern California Edison Company from Aug. 1, 1917, to Aug. 1, 1922.

from the reply of an executive of a western utility to a request for data regarding the policy of his company. His statement follows:

"In the matter of customer ownership, nothing has been done by the company, not that we do not believe in it, but because our condition is such that securities of the company are almost worthless.

"We are practically at the end of our franchise, which allows us, in addition to the use of the streets, the use of the municipal water system for power purposes. There is a movement under way by municipal authorities to take over the water power generating system themselves and compete with this company, and until this problem can be worked out, it is impossible for us to do anything on a customer ownership program.

"I believe that had a program of this sort been undertaken years ago, it would have been the solution of the present problem."



An example of concerted effort on the part of the electrical manufacturer and the dealer is shown here. In the lower right-hand corner is the manufacturer's advertisement appearing in a national advertising medium. The advertisement run by the local dealer in the city newspapers is at the upper-left of the illustration. To carry the tie-in farther, the electrical merchant decorated his window with the appliance that was being advertised by himself and the manufacturer at the time.

Advertising and the Electrical Dealer

By Edwin L. Andrew*

THE problem common to all of us, manufacturer, jobber, and dealer, manufacturer's representative, magazine publisher, and specialist, is not to increase the use of electricity, nor to make homes more livable and business more profitable, but to sell goods. A bromide, yes, but a blunt fact we sometimes gloss over by more pleasant-sounding phraseology.

A mutual problem it is. There is no such thing as a manufacturer's problem or a dealer's problem. There is only **one** problem. It belongs to both, and will only successfully be solved by both when there is teamwork, and when each has a mutual understanding of the other's share.

If the problem is mutual then let us analyze it together. If we are to talk about selling let us talk of the whole story, for the real word selling includes that great business force, advertising, as well. The

one is an indivisible part of the other; it has to be in modern distribution.

The Place of Advertising in Business

Someone has defined selling as advertising by the spoken word, and advertising as selling by the written word. This is a definition more clever than final, but does illustrate admirably the interdependence of two things which are more often divided, and one set upon the right hand and one upon the left hand and the left hand knoweth not what the right hand doeth!

This is neither the place nor the time to argue the power of advertising. The successes it has made, its possibilities, its **power** for someone else, are well known. That the electrical industry, that the people in it, could use more of advertising with profit, we are undoubtedly agreed upon. But even after reaching such an amicable basis, we still have left the problem of **who** should do it. Here is a distinct

*Assistant Manager, Department of Publicity, Westinghouse Electric & Manufacturing Company.

phase of the big selling problem which I have chosen to split off from the main body for our consideration.

Here we have a piece of goods. On examination it proves to be an eyelash curler,—electric, of course. The manufacturer believes it can be sold in sufficient quantity to make a profit for him. Through the jobber, he convinces the dealer that there are profitable possibilities for him, too.

Who Shall Advertise?

Then here is the situation: Both the manufacturer and the dealer have profitable business in sight in eyelash curlers, if enough women wanted them and knew where to get them. I imagine that if in these United States there were only one dealer and one manufacturer, these two men, faced with our problem, would sit down together and say to each other:

"Two things have to be done. We've got to say 'Why' a lot of times, and then 'Where' a lot of times, and then the problem will be licked."

And I can imagine the manufacturer saying, "Well, I'll take the responsibility of telling the 'Why.' I made the curler and it's the sensible thing for me to do."

And the dealer would have replied, "And it's up to me to say 'Where.'"

And then they would have grasped hands and congratulated each other upon the fair division of the responsibility.

For it has been and always will be the responsibility of the manufacturer to tell and to bear the cost of telling Why his goods should be bought.

And it has been and always will be the responsibility of the dealer to tell and to bear the cost of telling Where the goods can be bought.

Until both accept their burden there is no solution! The meat is in both halves of the nut!

It is an easy thing to skip from this point to a discussion of how to advertise; that is, what to say, the virtues of the 12-point Caslon in contradistinction to Cloister Italics, and similar highly interesting but comparatively inconsequential details. Just because so much of this skipping has been done, and serious talk about a few important fundamentals sidestepped, many of us who have started on the advertising journey without a compass, have put in at the nearest port and pronounced it all a bad job. No skipping here!

Be Prepared to Advertise Then Go Ahead

Let no one ever spend a cent on advertising who has not counseled with himself and said, "I believe that advertising will bring me profits, when and only when I have been at it long enough to build up a public consciousness of it and a public confidence in what I have to say, and I will not stop by the wayside until I have reached the goal which is surely there—and even then I will not stop."

There must be Faith. There must be Consistency. There must be a Budget.

Without the last you cannot have the second. Without the first you cannot have the last. Without all three, do not start to advertise!

But what shall be the media where the dealer is to practise his Faith?

There are three great ones: the newspaper, the show-window, and the U. S. Mails. It is hard to say which is greatest.

The newspaper reaches your whole city at a very small cost per person and is an invaluable medium for the downtown dealer. He can hardly afford to be without it. But for the neighborhood dealer it is an unwise investment.

The show window reaches—well, just for your own satisfaction, get someone to count the crowds that pass your store in any one day. You'll be surprised at the people your windows can reach. Spend a couple of dollars to find out.

And the U. S. Mails. What a power! You reach whom you choose, when you choose, and talk to them in a personal manner, as man to man.

Store Personality Builders

These things you all know and I shall not elaborate upon them. They are the three media where the dealer may most effectively build up the personality of his store. For outside of the goods themselves, that personality is the dealer's stock in trade.

Though we seem to have strayed far from our subject, I think we are now in a position to pull the loose ends together.

I have tried to point out the individual responsibilities of dealer and manufacturer in the job of advertising-selling. That nearly all electrical manufacturers have accepted their responsibility cannot be doubted. They are consistently telling the "Why" in their national advertising, which consists of space in national magazines, in local newspapers, and in other media. The dealer has rightly expected the manufacturer to do this before attempting to distribute his products. But is it too blunt to say that the manufacturer has been just a little disappointed that more dealers have not fully accepted their share of the responsibility?

Team Work Is Needed

To be sure, it is partly the manufacturer's fault. Perhaps we have talked so hard about "tieing-in" that we have sounded excessively selfish. After all, the problem is not to establish a definite "tie-in," but to establish a definite team.

Perhaps there are some of the "Whys" and some of the "Wheres" that can be told in the same space, or in the same window. There would be real team work, on a just basis, when the manufacturer paid, in such cases the "Why" share of the cost, and the dealer paid the "Where" share. Both are interested in the sale of the same piece of goods, because both make a profit on it. And the best part of the story is that by teaming up in this fashion the manufacturer can, because of quantity production, provide the "Where" share of the dealer at less cost to him than he could obtain his window display service, or his individual advertising copy for himself.

Such teamwork is coming. The tie-in has to become a team.

ELECTRICITY IN INDUSTRY



By Louis F. Leurey
Industrial Electrical Engineer

Installs Special Motors and Control for Individual Drive

At the plant of the California & Hawaiian Sugar Refining Corporation at Crockett, Calif., two very advanced groups of electrical drive have been installed within the past two years. The first group, which is illustrated in the accompanying photograph, consists of twenty-two directly driven sugar centrifugals which handle the raw sugar when it first enters the plant. Each of these centrifugals is driven by a 30-hp. vertical motor which is especially designed with high starting characteristics for this type of service.

These motors are controlled by a single drum switch whose handle is so arranged that when thrown in the off position it also actuates a band brake and rapidly stops the centrifugal basket. These baskets are so designed as to dump their content as soon as the motor has come to rest, in this

way eliminating considerable labor previously needed in taking out the product.

This installation shows an excellent quality of cooperation between the designers of the mill machinery and the designers of the electrical equipment in that its simplicity of control is well within the capacity of even the most inferior quality of mill attendants.

The second installation consists of sixteen 40-hp. wound rotor motors with magnetic contactors, driving centrifugals for preparing the finished white sugar. Here again the problem was somewhat different, but with the excellent cooperation existing, control of this situation is as simple and as effective as in the case of the raw sugar installation.

Both installations have resulted in the elimination of long lines of shafting, with their incidental high upkeep cost, and have also resulted in a more economical and flexible application of electricity in handling the sugar product.



Through the cooperation of the manufacturer of mill machinery and the designer of electrical equipment these special motors and controls have been perfected for use in the California & Hawaiian Sugar Refining Corporation's mill.

Electricity in Modern Hotel Service

Camp Curry, in the Yosemite Valley, has the most completely equipped and largest electrical kitchen of any private house or hotel in the United States according to western electric rating. With the equipment at this Camp, five thousand meals are served daily, and in addition to the service in the hotel proper, electrical service is provided for the



The store room and main switchboard at Camp Curry in Yosemite Valley. Through the efforts of Charles M. Matthews, chief electrician, this outing place now has the largest electrical hotel kitchen in the United States.

lighting of 650 tents and a complete system of hot water heating for 120 bungalow rooms.

In recognition of the magnitude and advanced character of the service along these lines, Charles M. Matthews, chief electrician of Camp Curry, has brought further honors to the hotel world and its personnel by being the only hotel electrician to be rated in the Electricians' 1922 "Who's Who."

In addition to the wide range of equipment used at this Camp, Mr. Matthews has personally designed and built, the first, and as far as is known, the only motor driven toaster now in operation.

The accompanying photograph of the main electrical shop at Camp Curry gives some idea of the magnitude of electrical equipment involved, with an insert of Mr. Matthews who has been largely responsible for the high state of electrical development at this Camp.

Measuring the Kilowatt-Hour

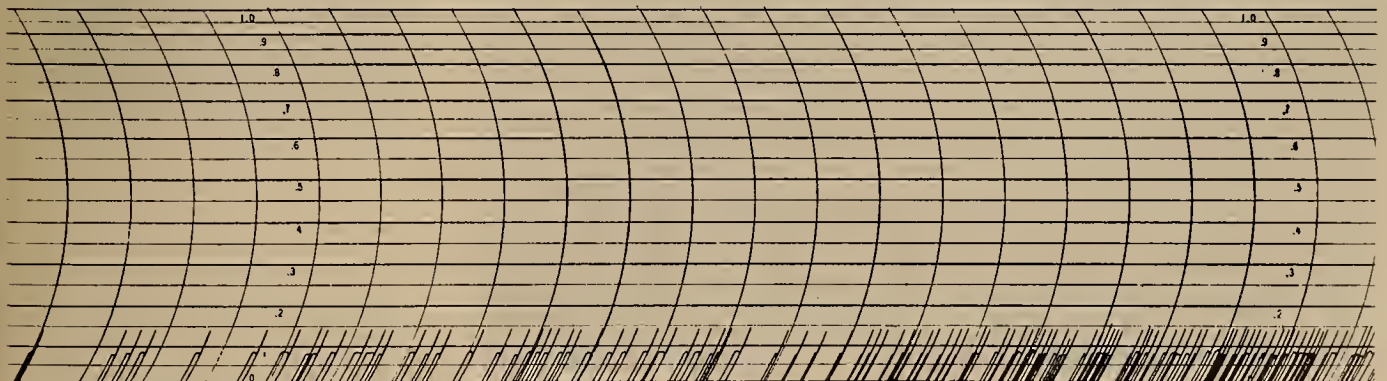
There is no form of energy nor is there any form of commodity within the entire range of the industrial field which can be measured with the unvarying exactness and the nominal cost which exists in the use of electrical meters. With a commercial accuracy which is generally better than 99 per cent, quantities of power from the smallest commercial lighting installation to industrial installations amounting to millions of kilowatt-hours per month, are measured by electrical instruments at such a

In practically every form of commodity or energy measurement, the cost of the measuring instruments varies almost directly with the magnitude of the quantity involved, but due to that extraordinary characteristic of the electrical circuit by which a minute by bypassed quantity of electricity is exactly indicative of the total quantity passing through the main conduit, it is possible to measure millions of kilowatt-hours at almost the same cost that would measure hundred of kilowatt-hours.

It is little realized in most industrial plants what a remarkable fund of valuable information can be secured by a complete instrument survey of the electrical power supply and circuits within the plant. Among the concrete things which it accomplishes are: first, the knowledge of whether motors and circuit are over-loaded or under-loaded; second, it provides exact information as to the allocation of power at the various divisions of the plant processes and furnishes a true basis for plant accounting and true manufacturing costs; third, the study of the electrical performance of the plant's motor circuits almost invariably tells a characteristic story of the corresponding process performance, and the electrical indicators can be used to great advantage.

THIS DEPARTMENT

will be devoted to a discussion of new and interesting applications of electricity to industry in western industrial plants. Readers are asked to aid in the solution of the most vital problems facing industry by sending in accounts and pictures of various unusual applications of electricity which have been made in plants with which they are familiar. It is only by thus cooperating with Mr. Lenrey that the fullest service can be rendered. Space rates will be paid for all material which is published.



Kilowatt input curve for a 50-hp. elevator pump motor at the St. Francis Hotel, San Francisco. The motor is controlled by an Electric Controller and Manufacturing Company's automatic compensator. The portion of the curve at the left shows the improvement in starting conditions obtained from the information given on the right of the curve.

JOBBER, DEALER AND SALES AGENT



Repair Department Modernized by Fresno Company

Modern equipment in the kitchen recognizes the principle that glass containers for food, permit the housewife not only to recognize the object of her search without difficulty or the necessity for reading labels, but also to see the state of her larder at a glance, thus being able to notice what stock is low and what needs ordering. The druggist and the candy store have long appreciated this advantage.

A similar principle has been applied to materials used in the repair department by the Valley Electrical Supply Company of Fresno, Calif. There are a great many small parts required for minor repairs, such as screws of various sizes, many of which would be difficult to identify by labels. For such material a rack has been provided carrying an equipment of glass bottles of uniform size, each with a red and white label similar to that used in drug stores. These are arranged according to the nature of the material contained, so that everything is easily located. It is thus possible for the workman to locate what he needs at a glance, merely by comparing his specimen with the

contents of the bottles. It is also obvious what stocks are getting low and what needs reordering.

Bulkier material is similarly stored in bins clearly labeled according to the nature of the part and the appliance to which it is applied, as well as the make of the article in question. There is thus one department for fan parts, divided off into various makes of fans. Labels used are large enough to be read without difficulty.

In handling a repair job, the appliance to be mended is received at the store counter and tagged at once with the address, nature of equipment and repairs required, date promised, etc., and at once sent down to the repair department, situated on the floor below, by means of a dumb waiter.

All work is handled at the properly outfitted repair benches, workmen keeping a careful schedule of their time and listing on cards provided for the purpose the number of the job on which they have worked, from such an hour to such an hour. The cards have the hours and subdivisions listed, with a space for the name of the workman, so that this may be done with a minimum of time consumed.

Each repair tag is numbered and this

serves as the job number for the entire transaction. On completion of the work, the appliance is placed on a shelf near the store counter where it is easily accessible when the customer calls. These shelves are divided into compartments which are numbered from one to ten and the appliance is placed in the bin which corresponds to the last number on its tag. Thus 321 is placed in compartment 1, 325 in compartment 5, and so on. As the tags are consecutive, this insures an even distribution of jobs between the bins.

New Electrical Home Exposition Booklet Is Published

Under the title of "My Own Electric Home," a booklet suitable for distribution at electric home exhibitions has just been produced by the Society for Electrical Development. This illustrated booklet appears in an artistic cover, printed in three colors. It is 6 x 9 in. in size and the copy has been so worded that it will conform to the requirements of an electric home exhibition in any part of the country. Fourteen pages are standard copy and two pages are



Small parts such as screws, bolts, nuts, and washers are kept in these bottles, which are arranged according to the nature of the devices which the parts fit. Larger pieces of material are stored in the bins below the bottles. In this way the Valley Electric Supply Company of Fresno, Calif., is able to keep an accurate check on the supply of stock on hand.



The Electric Home Booklet

available for copy to be supplied by the user, thus permitting the introduction of the necessary local color.

With one or two minor changes, this little booklet is equally suitable for distribution to the consumer by manufacturers, central stations and jobbers. The prices at which it can be supplied in quantities are much lower than a booklet of equal size and merit can be produced for in the average community.



The new home of the George A. Gray Company at 910 Howard St., San Francisco. This firm recently moved into this modern one-story building, leaving the main electrical district of the city. The display room is located on the right-hand side of the building on the first floor.

Making the Warehouse Part of the Display Room

George A. Gray Company, San Francisco Manufacturers' Agent,
Shows Belief in Electrical Products Handled

The new headquarters of the George A. Gray Company, 910 Howard St., San Francisco, have been fitted up by the firm to demonstrate to its customers that the manager of the company firmly believes in the advantages and utility of the electric materials which it sells. Throughout the entire building, which is a one-story structure of modern construction, electrical equipment stocked by this manufacturer's agent, is utilized to the fullest extent.

Mr. Gray, manager of the company, believes that by thus making practical use of his stock, he can show to the jobbers who buy from the firm, the adaptability and utilitarian advantages of his electrical equipment. By showing the faith of the company in the stock, he feels that this faith can be passed on to the jobbers and through them to dealers and customers, thereby increasing the sales of the entire group of men interested in the merchandising of the products that his company handles.

All of the wiring of the warehouse and display room is covered with metal conduit, for which the firm is the manufacturer's agent, and the finished touch which this installation gives is particularly pleasing to the eye. This conduit is used from the service entrance to the farthest drop light in the building and, in addition to producing a slightly appearance, the brushed brass of the metal enables anyone to quickly follow any circuit, should it be necessary to connect additional fixtures to

any particular line. In the past it has been the general practice of warehouse builders to install large and unsightly conduit, feeling that the additional expense for the more attractive finished conduit was not warranted. The George A. Gray Company, however, feels that its warehouse is visited by jobbers and that any expense for displaying elec-

trical equipment actually installed will be a wise one.

The fixtures which have been installed are all products of the manufacturers represented by the firm and in the warehouse are fitted with chain pulls, enabling men working there at night to illuminate any section of the building regardless of the remainder. A master switch is also installed to provide means for shutting off all of the lights when the warehouse is closed for the night. The fixtures which have been placed in the warehouse were chosen because of their properties for diffusing the light.

During the day, there is no need for artificial illumination as the warehouse is extremely well supplied with skylights and windows. In the store itself there are six large skylights and windows extend across the entire rear of the building. To secure the diffusion of this light, all of the wall and ceiling surface has been painted white and this painted surface reflects whatever light may strike it.

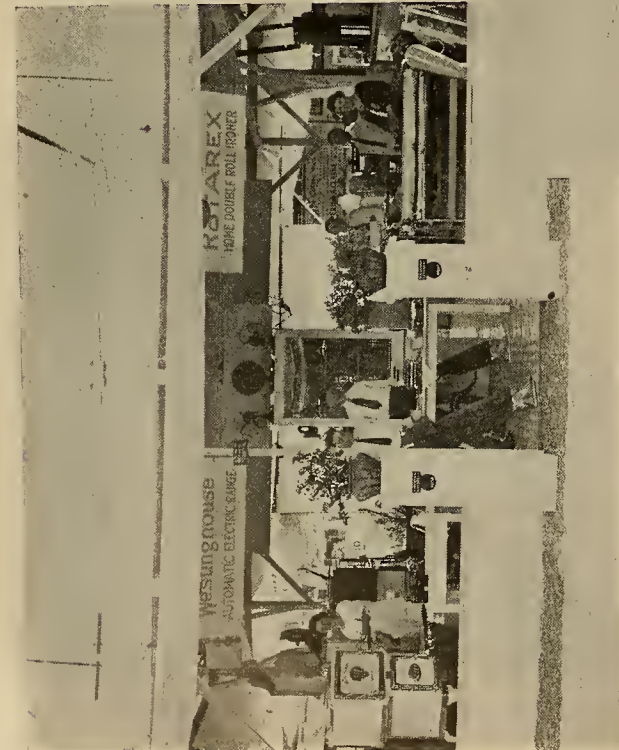
The stock carried by the company is all raised from the floor by platforms about 4 in. high, upon which the boxed goods are piled. All of the stock is arranged in rows, and aisles are left to allow easy trucking between the tiers of boxes. Rolls of loom are kept on decks raised about 5 ft. from the main floor.

In the front of the building there is a show room, which contains samples of the equipment handled. This enables the salesman to show all of the parts carried in stock without breaking into boxes which are kept in the warehouse. At present the office is also located on the main floor, but it is the plan to move this up to the mezzanine floor which extends across the front of the building.

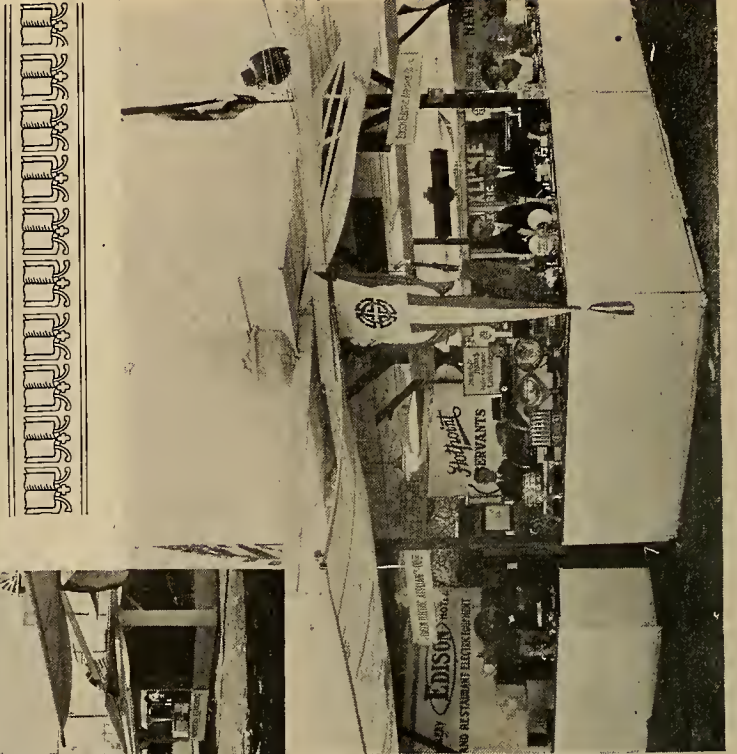
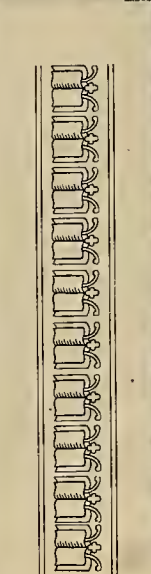
The manufacturers which the company represents are: the American Wiremold Company, the Ansonia Electrical Company, the M. B. Austin Company, the Diehl Company, Pass & Seymour Company, George Richards & Company, the Trico Fuse Manufacturing Company, and the Wirt Electric Company.



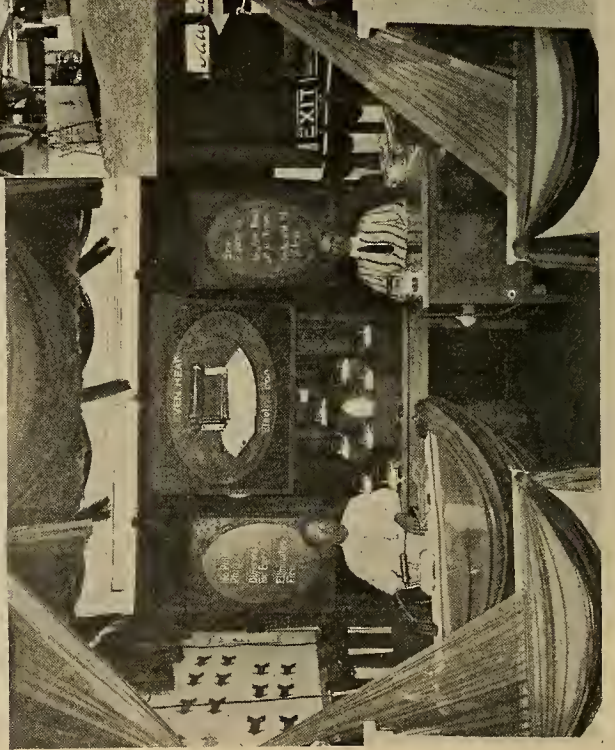
Interior of the warehouse of the George A. Gray Company. The metal conduit which is used throughout the building may be seen on the rafters at the extreme left of the picture. Daylight entering through the well-located skylights aids this firm in keeping the stock in good order.



THE electrical industry in Los Angeles realizes the merchandising possibilities in the trade show and industrial exposition. These pictures show some of the booths at the recent Pageant of Progress in that city. In the center is the exhibit of the Electric Club and the California Electrical Co-operative Campaign which stood in the center of the electrical section. One section of the exhibit of the



Westinghouse Electric & Manufacturing Company is shown on the upper left. The upper right is the booth of the Western Electric Company. The picture at the lower right shows the exhibit of the Edison Electric Appliance Company, where demonstrations were given continuously. The lower left picture shows the booth of the Even Heat iron, a Los Angeles product.



Los Angeles Exposition Is Acclaimed Success

Primarily an exposition setting forth the manufactured products of Los Angeles and the immediate vicinity along with the products of wholesalers and distributors in the section, and secondarily a spectacular attraction, the California Pageant of Progress and Industrial Exposition recently held in Los Angeles, was brought to a successful close to the satisfaction of all of the exhibitors and men in charge. The exposition was presented under the auspices of the Los Angeles Chamber of Commerce.

At the first the electrical industry was in favor of entering the exposition and as the plans advanced the members of the industry become more interested and at the opening, their exhibits were among the best presented. That electrical apparatus is sure to attract attention was proved at the recent show. Thousands of people filled the electrical section daily. The electrical display was located in a particularly favorable place, being next to the huge fireworks exhibit.

A great deal of interest was aroused by the Central Display Feature, which was run under the auspices of the California Electrical Cooperative Campaign and the Electric Club of Los Angeles. The display was made possible by the assistance of all members of the industry as the expense was shared by all, whether exhibitors or not. This display included a model kitchen on a raised platform, from which lectures on electrical cooking were given daily by two women and a man from the dietetics departments of three of the local newspapers. These lectures proved of great interest and were daily attended by a large number of women. In addition to the lectures given from this platform, various appliances were on exhibit and musical concerts were given by bands from two of the power companies.

As to the results of the exposition, A. G. Arnoll, assistant secretary of the Chamber of Commerce and manager of the Industrial Department, stated that the outstanding feature was the fact that there came to Los Angeles during the two weeks of the show, a veritable army of buyers—customers—for the manufacturing and wholesale institutions and that the effects of this visitation of buyers have already shown themselves in a number of commercial lines. All industries report an increase in sales and in a wider territory than ever before, and that the heightened appreciation of Los Angeles products among local dealers and the general public is greater than could have been accomplished through any other agency in so short a time.

Practically all electrical exhibitors without exception reported that the direct and indirect results, in sales from their booths, more than paid the cost of them.

The Hendrie and Bolthoff Company of Denver, during the world's series, set up a radio receiving station and reported the games, play by play, through a loud speaker for the benefit of the crowds in the vicinity of the union station.

Advice to Tea Drinkers and Price Shavers

By JOE OSIER

Once upon a time, about 2,000 years ago, or more, when the Chinese were building the wall around that country—

To keep out barrel jumpers, knife throwers, insurance agents and—

Other pests—

An old Chinese philosopher, who was trying to earn a few sen by honest toil—

Dropped his trowel for a few minutes—treated himself to a shot of hop and released the following for publication:

"The fool in a hurry drinks his tea with a fork."

Then, history records, he picked up his trowel, warmed his salary arm with a couple of aimless swipes and finished the shift without looking up.

That particular philosopher is dead. I am not in a position to state whether he died from overwork or hop, but, regardless—

He left a priceless legacy to mankind in that celebrated statement.

Today, in this age of Democracy and the Devil on the tail light of the hindmost, we find so-called business men in all lines of human endeavor,—

Trying to drink tea with a fork and—

Wondering why in the name of a name, they cannot quench their thirst.

The Electrical Contractor-Dealer who shaves his price to the gnat's knee in order to sell a bill of merchandise or land a contract is—

You will have to admit it—

Substituting a fork for a spoon or—

A saucer.

He is short changing himself; stacking the cards for someone else; robbing his own trunk.

And, what does he get out of it, except the fascination of business?

Friends, readers, fellow sufferers, in this fighting, fearless column, I hereby go on record as saying that the knell is ringing—

Louder and louder, Harry—

For the men in the electrical industry who have worn their stub pencils down to the eraser—figuring fine—

In an effort to nose out a competitor.

"You ask how I got such an excellent job of wiring and such high-class fixtures at that low figure"—

Remarked a builder to me the other day.

"Here is how. I kept rejecting figures and calling for new ones until I got 'em down where I wanted 'em. In other words, I let the Contractor-Dealers slit each others' throats. And, they wanted the business so bad, they put up a wonderful battle, and I just laughed and—

"Kept my pennies in my poke."

Each day, I have reason to believe, this battle is being staged for the benefit of builders who joy in seeing the boys—

Who carry the overhead and meet the pay roll—

Claw and rend each other.

"With the dawning of the new day"—

As they say in the "movie" business, these same gladiators sally forth—

After buckling on their bloodstained armor,

To again do battle with the relentless foe who has never tasted defeat.

For, let it be broadcasted hither and yon, business battles cannot be won by price slashing practices. The advantages seemingly gained are nothing more nor less than—

False starts and—

A few false starts usually put a business man in that unenviable position which befell the hombra who—

Spoke out of his turn.

He lost the decision and four front teeth.

But, anyway, my moral is this:

If you must slash—always whittle from you, and the receiver will bleed to death.

Electric Home to be Featured in New Motion Picture

The Electric Home idea has spread like wildfire throughout the length and breadth of this country and Canada, and now we are to have it brought to the attention of the public through the medium of the silver screen.

Picturization of the electrical idea is not new but the particular method adopted by the Atlas Educational Film Company of Oak Park, Ill., is an advance over the usual way that is worth noting.

This movie will start from the ground up and will go through the various phases of financing, selecting the lot, making arrangements with the architect and contractor, choosing materials and furnishing the home. The electrical side of the picture will receive special prominence.

The film will be a veritable traveling "Own Your Home" exposition covering the entire country, and already bookings have been requested in practically every large town and city for showings before audiences of the type that will put into practice what they see depicted on the screen.

The Condit Electrical Manufacturing Company, South Boston, Mass., in Bulletins No. 450 and No. 452, describes its type D-18 and D-22 oil switches and circuit breakers. These are both made in the automatic or non-automatic design.

The Mountain States Machinery Company, of Denver, was recently awarded the contract by the government for the installation of asbestos shingles on all the new buildings at Fitzsimmons General Hospital, close to Denver, at a price close to \$25,000.

Ellery Stone, head of the radio department of the Pacific States Electric Company with headquarters at San Francisco, recently visited the Portland and Seattle branches, looking toward establishing radio representatives in both cities. This company is optimistic about the future of the radio business and is laying in stock in anticipation of bigger business during the coming winter.



A view of one of the aisles in the Tacoma Electrical Exposition, showing how the entire building was decorated with autumn leaves. The floor was covered with sawdust upon which mica was sprinkled every evening, thus producing a crystal-like effect when the lights were turned on. B. R. Nichols, manager of the exposition, is seen in the insert.

Tacoma Electrical Exposition Merchandising Aid

Central Stations, Manufacturers and Dealers United to Display Electrical Apparatus With Good Results

As an aid to the electrical industry of Tacoma, Wash., the Tacoma Electrical Exposition, which was closed on Sept. 23, was acclaimed a great success. The educational features of the exposition, exhibited to nearly 25,000 people, prepared the way for many sales of electrical appliances to the Tacoma residents.

From the point of view of the entire electrical industry in the city the exposition was a great success, but particularly the dealers in electrical appliances felt the advantageous publicity that was given to their products.

Having experimented in 1921 with a new type of electrical show and proven beyond question in 1922 that it is a big success from every standpoint, the annual repetition and growth of the exposition is now a certainty.

The Tacoma Electrical Exposition was an educational, but nevertheless a frank business institution, rewarding the public which it invited to its doors with a broad education in the application of electricity to modern every-day life.

That the public felt that it would be amply rewarded for going a bit out of its way and spending several hours viewing the exhibits, was attested by the fact that 23,970 people, in a city of 120,000 population, passed through the doors of the second exposition. As satisfactory proof of the business value of the exposition, the electrical houses which exhibited show respectable lists of sales made directly through the exhibit, in addition to all the advertising and future prospects secured.

The public was given, in the Tacoma Electrical Exposition, the exact and comparative data upon electrical appliances which it eagerly desired. Probably this is the secret of the large success of the show. Even in a city which has put electricity abundantly within the reach of the humblest home, electrical devices are still so comparatively

new that the general public feels the need of education. Appliances have not yet become standardized in the knowledge of the average householder.

It was therefore to the advantage of the appliance dealers of the city to see that the house owners and residents of the city were informed as to the advantages of the electrical appliances which are on the market. The electrical exposition furnished an excellent opportunity to these dealers to place this knowledge before the people of Tacoma. Just such advantage was made of the opportunity afforded and nearly every electrical dealer in Tacoma was represented on the display floor. Along with the dealers at this exposition were the municipal power plant, the private power companies, and the electrical manufacturers.

The cooperation between all elements of the electrical fraternity was complete in the Tacoma exposition. The arrangements were in the hands of a committee made up of representatives of the various electrical industries of the city. The city light department took a parental interest in the exposition from its inception and B. R. Nichols, of the department, acted as manager this year.

The exposition was conducted from Sept. 19 to 23, inclusive. A vacant industrial building on Dock Street, about five blocks from the business center and affording the largest ground floor space in the city, 40,000 sq. ft., was secured for the show.

The huge open structure was divided lengthwise by three main aisles 22 ft. in width. Exhibitors built their own booths. Profuse use of evergreens and decorations in autumn tints robbed the building of its plainness, while a floor covering of sawdust was made to scintillate in the light of hundreds of lamps



The exhibit of the Pacific States Electric Company at the Tacoma Electrical Exposition, illustrated the improper and the proper methods of wiring. The room on the left has been improperly equipped with electrical outlets, thus causing the maze of wires, while the room on the right shows one in which the outlets have been correctly located.

with which the building was strung, by sprinkling mica over the sawdust each evening.

The streets leading to the exposition building were strung with lights. The doors were kept open from 10 a.m. until 11 p.m. A single door was maintained for both entrance and exit, the result being to encourage visitors in making a complete round of the exhibits and spending more time than if exits were maintained at several points.

Night was the time when visitors thronged the building in greatest number, as many as 3,000 passing through the doors in a single hour. A registration booth was operated, one prize from each of 28 exhibitors, distributed by drawings at the close of the exposition,



An exact reproduction to scale, of the City of Tacoma's hydroelectric plant on the Nisqually River, made by two plant operators, was shown by the municipal water department. Mount Rainier was modeled in the background.

making the registration attractive. The prizes offered varied in value from \$5 to \$40.

As further attraction, musical programs by an orchestra were given, supplementing the almost continuous receiving of broadcasted entertainment by a radio booth. A lunch and refreshment room was operated by club women and was a popular feature.

The committee made it a rule that the element of education should be prominent in all exhibits. Some of the exhibits, like that of the city light department, the telephone and traction companies, were almost purely so. The exhibitors of electrical ranges, toasters, percolators, washing machines, mangles, vacuum cleaners, house and water heaters, motors, ventilation systems, radio and a host of other appliances, all demonstrated their goods, giving visitors opportunity to judge of results for themselves.

The city light department had on exhibit its line of ranges, but it made a feature of demonstrating how to read meters and how fires are started by "loading" or "jumping" fuse plugs. The necessity of inspection of wiring was impressed on the visitors of the booth.

As a separate part of the city's exhibit was a replica of the municipal

power plant at LaGrande, on the Nisqually River. This beautiful and faithful reproduction to scale, the work of months on the part of city plant operators, showed the power house at the bottom of the deep Nisqually canyon, water passing from the reservoir above, and back of all the peak of Mount Rainier, whose melting glaciers feed the plant.

Giving further emphasis to the city's demonstration, one construction company exhibited two rooms wired for electric service, one a model of modern practice in wiring, the other a complex, dangerous, unsightly tangle of wires improperly run. In addition to this wiring exhibit the company displayed numerous appliances, thus making double use of the space.

The telephone company illustrated the complexity of a telephone service system, showing a typical underground manhole and cable splicing; sections of large cable peeled down into their thousands of strands, and other equipment. The Tacoma Railway & Power Company illustrated the many points in western Washington where it and its allied corporations are generating and distributing electrical energy, by means of a map on which blinking lights indicated power installations.

The exposition would not have been the success it was without the crowds and the crowds would not have appeared without having had notice of what would be seen and where and when to go. The advertising and publicity that gained the crowds was obtained through several channels. Newspaper advertisements were run and were supplemented by reading articles begun well in advance of the opening day. Much front page space was given by the papers during the exposition. Automobile and street car banners gave wide notice of the time and place, and selected mailing lists were used for direct personal appeal.

The States Company, Hartford, Conn., has announced an automatic series cutout for street lighting circuits which prevents the whole circuit from going out because of one open due to a fallen tree, limb or other cause. The automatic series cutout eliminates a danger from those dangling, high voltage wires. It kills the ruptured section, at the same time automatically completing the circuit, allowing the major portion to continue operation uninterrupted. It can be used on alternating or direct current, or on circuits fed by rectifiers. Catalog No. 3, Section 2, covering this cutout has been prepared by the company.

Radio equipment has come to be one of the leading lines of the electrical dealer on the Pacific Coast. Many dealers are receiving calls for parts with which amateurs make up their own sets. The western dealer can supply this class of trade at a good profit. In this picture can be seen the interior of a detector and two-stage-amplifier receiving set made up by an electrician to operate over a 120-mile radius.



Valuation Case Is Before State Railroad Commission

What is believed to be a record hearing before the Railroad Commission was brought to a close when the taking of testimony was concluded in the rate and valuation case of the Pacific Gas & Electric Company. The proceeding, which was heard by Commissioner Chester H. Rowell, occupied 42 days of actual court sessions and the transcript contains over one million words. In addition, 102 exhibits, some of them very elaborate, were presented. The Pacific Gas & Electric Company offered 65, the municipalities served by the company 6, the Farm Bureau Federation 16, the Railroad Commission 12 and miscellaneous consumers 13.

The largest exhibit was a complete inventory of the property of the company, quantities and unit costs of which were checked by representatives of the commission and the cities. The chief items of the property inventoried were 19 hydro and 3 steam electric plants of a total capacity of 330,000 hp., 180 substations, 888 buildings, 2,240 miles of high tension line, 5,410 miles of distribution line, 115 miles of underground line, 200,000 poles and a total of 30,000 miles of wire and cable.

The company's claim of total valuation is \$170,711,271, including \$33,000,000 of intangibles, such as water right value and development cost. The historical cost of the plants was given at \$112,827,000 and a reproduction cost under average prices for the five-year period 1915-19 was computed at \$137,991,986. This figure includes additions and betterments since 1919 at cost.

The company's final exhibit was an estimate of the total revenue and expenses for the current year, the figures for eight months the actual and estimated for the last four months of the year. Total revenue was given as \$23,956,346 and total costs as \$11,919,664, leaving net revenue available for depreciation and return \$12,036,682.

The case was set for oral argument beginning Tuesday, Nov. 14. The attorneys representing the various interests involved estimated that the argument would consume the remainder of the week.

Bryan Marsh Division of the National Lamp Works has appointed a new representative in the Rocky Mountain district to look after increasing business in that region. The establishment of H. W. Coombs with headquarters in Denver was recently announced by Jerry Monroe, central station representative of the company.

INDUSTRIAL NEWS



Oak Grove Development Contract Given to Portland Firm

A general contract has been awarded the Hurley-Mason Company of Portland by the Portland Railway Light & Power Company for the construction of the first unit of the Oak Grove development. The contracting company is now at work on a wagon road up the Clackamas River connecting the rail head with the power house site and intake.

Permanent camps are being built to accommodate several hundred men who will be used throughout the winter on the road work, diversion dam, tunnels, etc. It is planned to have the first unit, probably of 25,000-kw. capacity, operating by the summer of 1924, and it will be able to furnish 25,000 kw. continuously as it uses only the minimum flow of the Oak Grove fork of the Clackamas.

Two additional units of approximately 25,000 kw. each may be installed later, as required, by the building of reservoirs on the headwaters of the Oak Grove Fork and Main Fork of the Clackamas. The power will be transmitted to Portland, a total distance of about 55 miles.

Long Transmission Line Nearing Completion in Oregon

Work on the new 110-mile transmission line from the Prospect plant of the California Oregon Power Company to Springfield, Ore., is fast nearing completion. In the near future it will be possible by means of the new line, to transmit current from the power plants of the company located in California several hundred miles and deliver it at Springfield, to the Mountain States Power Company.

Suspension insulators are being used on an H frame pole construction, carrying one 60,000-volt circuit. The line has a rated capacity of 8,750 kw. Later when the increase in business justifies it, the company plans to increase the line voltage to 110,000 volts and so increase the line capacity to 21,000 kw.

Appropriation of Logan River Withheld for One Year

A proclamation has been issued by the state engineer of Utah, by which the Logan River and all tributaries are withdrawn from appropriation for an additional year.

The proclamation extends the withdrawal made a number of years ago to protect water rights for the proposed irrigation project of the Logan River Water Users' Association. Under this proposed project a large acreage not

now under canal is to be brought under irrigation. The association has had undertaken an extensive survey in Logan canyon, and it is now proposed to build a large storage reservoir. Due, however, to the fact that the association has not had completed the surveys, no definite water filing can be made yet and the withdrawal is extended another year at its request.

The association, however, specifically asked the state engineer to hold up the issuance of the proclamation for one year after the expiration of the one which has applied heretofore to allow Logan City to make a filing on the river for power purposes. This and a second filing have been received.

The filing of the city of Logan seeks to divert 125 sec.-ft. of water by means of a concrete dam with metallic gates. The water is to be carried through a diverting channel 12,277 ft. in length to a storage tank and the power house. Two water wheels of the Francis type are to be operated under a head of 96 ft. for developing 1,091 hp. for supplying the citizens of Logan. It is planned to enlarge the Logan canal for the first half mile of the diverting channel and to carry the water from there to the power house in a 60-in. pipe line.

The second application is for the use of 1 sec.-ft. of water by the Provincetown Water Works for a municipal supply.

City of Mexico Will Have More Electric Power Soon

To provide more electric power for industrial and lighting purposes in the City of Mexico and the surrounding territory, the Mexican Light & Power Company plans to install a large power plant at Beristain, Mexico. The installation alone will cost about \$1,000,000. Turbines for the plant will be furnished by the Pelton Water Wheel Company of San Francisco and the two power units will supply 40,000 hp. The first unit has been completed and shipped into the power plant site.

Financial backing for the new installation has been furnished by the Canadian General Finance Company of Montreal. A large force is at work on the Beristain plant, the construction of which will take several months.

Abandonment by the Silverton Railway Company of the narrow-gauge railroad between Silverton and Ouray, Colo., was authorized by the Colorado Public Utilities Commission recently. It was claimed that the road had failed to return a profit for more than ten years.

State Commission Ruling Delays Modesto Bond Issue

Feeling that competition with an established public utility company is a mistake, the California State Bonding Commission has advised the directors of the Modesto-Turlock Irrigation District to await the results of the condemnation proceedings against the Pacific Gas & Electric Company before issuing bonds to cover the construction of another transmission line for distributing the power generated at the Don Pedro dam.

Turlock has at present condemnation proceedings pending for the securing of the lines of the Pacific Gas & Electric Company and should this line be secured for the irrigation district, the bond commission suggests that Modesto district save the cost of additional distribution lines by connecting with the main lines of the Turlock district by means of the Pacific Gas & Electric Company lines.

A transmission line from Don Pedro to Keyes, Calif., is now under construction by the Turlock district. This is being financed by the money that was secured from bonds voted at the time of the first Don Pedro dam election. Some money will be left over for the distribution system, but not a sufficient amount to complete the entire system. Should the bond commission's ruling, on the Modesto application for bonds, stand, Turlock will not be able to secure additional finances from bond sales until after the settlement of the condemnation suit against the power company. This may take from three to five years.

Telegraph Hill Station to Aid Western Business Men

To provide for the western states a financial, commercial and agricultural broadcasting service the Mercantile Trust Company, of San Francisco, has recently installed on Telegraph Hill, one of the most powerful radiophone broadcasting stations in the United States. Under normal conditions this station has a sufficient range to reach the most remote points in the territory west of the Rocky Mountains.

In cooperation with the Mercantile Trust Company, the San Francisco district office of the Bureau of Foreign and Domestic Commerce will broadcast information concerning overseas markets, commercial conditions in foreign countries and general statements as to foreign trade possibilities. The district manager of this branch of the government service has recommended that commercial organizations on the Pacific Coast purchase radio receiving sets in order that they may receive this information first-hand.

Commission Orders Elimination of Hazardous Conditions

Charged with the enforcement of the state law in reference to overhead electric line construction, the Railroad Commission has issued an order directing the Pacific Gas & Electric Company to eliminate by Aug. 1, 1923, specified infractions of the law in its San Jose division and by Dec. 31, 1923, bring its entire system within the provisions of the law and the regulations of the commission. This order follows an inspection in the San Jose division made by engineers of the commission and representatives of the utility. According to the report, 13,972 infractions of the law and other hazardous conditions were found.

The original act adopted in 1911 required all overhead electric line construction to conform to specified standards and gave the utilities five years to bring their old construction up to the new standards. In 1915 the law was amended to give the Railroad Commission discretion in granting extensions of time and also places the duty of enforcing the act upon the commission. Under the law as amended the commission is given power to make additions or changes necessary for the safety of employees and the general public, and the commission announces that it will require hazardous conditions to be remedied even when they are not in violation of the letter of the specified provisions of the state law. In the case of minor infractions existing prior to 1911 the commission stated that extensions will be granted so that these conditions will be corrected in the ordinary course of maintenance or reconstruction work. When work is required to be done on any pole, the entire structure must be brought into full compliance with the law.

For the guidance of utilities the commission announced its policy of enforcement of the act as follows:

In summing up the policy to be followed, it may be said that the immediate elimination of all infractions created since 1911, of hazardous conditions, and of minor infractions on the same poles will be ordered following each inspection; while minor infractions in existence at the effective date of Chapter 499 may be eliminated in the usual course of maintenance and reconstruction, providing they are not on the same poles as infractions that are to be removed immediately.

A like order was issued applying to Coast Valleys Gas & Electric Company, on whose system 4,178 infractions and certain other hazardous conditions were found. The company is given until July 1, 1923 to complete compliance with the commission's order.

Two Permits for Power Projects on Deschutes River Issued

Two preliminary permits involving an estimated ultimate development of 274,000 hp. from the Deschutes River in Oregon have been granted by the Federal Power Commission.

One of these permits was granted for the period of one year to the Pacific Power & Light Company of Portland. This gives the power company authority to make surveys of the so-called "Reclamation Site" on the Deschutes River, about twenty miles up stream from the point where it empties into the Columbia. It is esti-

mated that 54,000 hp. could be developed at this site under a head of 190 ft.

The second preliminary permit involves a total estimated development of 220,000 hp. at two points on the Deschutes with a three-year period for surveys and investigations. This was granted the Columbia Valley Power Company of New York, which had applied for permits covering five sites. In view of the fact that there exists no market at present for the great amount of power available it was decided to grant permits on two sites only.

Hotel and Power Plant Will Be Built at Lake Arrowhead

Construction of a hotel to be known as The Inn, will be started immediately at Lake Arrowhead, Calif., by the Arrowhead Lake Company, according to A. E. Warmington, sales manager of the company. The hotel will cost in the neighborhood of \$350,000 and when completed will be purchased by the Arlington hotel interests of Santa Barbara, Calif.

The board of directors of the Arrowhead Lake Company have also ordered the construction of the first unit of a power plant which when completed will deliver 1,000 hp. The first unit to be built will be of 300-hp. capacity and will cost \$32,000. The plant will be located at the bottom of the outlet tunnel from the lake and will be operated by the water flowing out of the lake in the winter months. The Southern California Edison Company will furnish the stand-by service to the lake company's lines.

Amended Application For Trinity River Project Is Filed

An amended application for a preliminary permit for the proposed project on Stuart's Fork of the Trinity River, near Weaverville, in northern California, has been filed with the Federal Power Commission at Washington, by W. H. Samson. The amended application calls for the addition of a storage dam and reservoir in Trinity River, just below the mouth of Stuart's Fork, and a power house at the dam.

A small diversion dam will be constructed at the tailrace of this power house from which the water will be conducted through tunnel and canal to a power house on Clear Creek, a tributary of the Sacramento River.

Motor Driven Booster Pump Is Installed at Portland

A large motor driven booster pump is about to be placed in operation by the Port of Portland. This pump which is driven by a 1,600-hp., slip ring, General Electric motor, is mounted on a barge and the pump connected into the discharge pipe line of one of the harbor dredges. In this way the booster pump assists the dredge pump in handling river material when the material is discharged some distance from the dredge.

Power is brought to the motor through 300 ft. of 3-conductor armored submarine cable, the shore end being connected to an oil circuit breaker mounted on a pole.

Oregon Cement Company Plans on Extensive Development

In conjunction with 3 miles of standard-gage railroad and 6,000 ft. of tramway, for which a call for bids has been made, the Portland Beaver Cement Company of Portland, Ore., is to construct a power line along the right-of-way of the new railroad. This development work will all be done in Josephine County, Ore., near the present Gold Hill plant of the company.

A 400-hp. plant is now being erected on the top of Marble Mountain and will be fitted with air compressors, machine shop and steam shovels for excavating the lime. The new railroad will open a large supply of 98 per cent pure calcium carbonate.

Fourth Unit Is Being Installed At Stave Lake Plant

The British Columbia Electric Railway Company of Vancouver, B. C., has 300 men at work at its Stave Lake plant, raising the present dam 25 ft., building a new sluice dam at the Blind Slough, installing a fourth unit of 8,800 kva. and three 60,000-volt, 3,000-kva. step-up transformers. The new dam will approximately double the water storage which is fed by glacial streams and form a lake 24 sq. mi. in area. The output of electrical energy will be increased 50 per cent.

The new generator will be in operation at an early date and will be available for the winter peak. The dam will be ready for the spring and summer freshets of 1923.

The Stave Lake plant is situated 35 mi. from Vancouver and the company owns and operates its own railway 6 mi. in length, connecting with the Canadian Pacific Railway at Ruskin, B. C. Two steam locomotives and one gasoline passenger car have been the motive power. When construction work started the company decided to electrify the line at a cost of \$50,000. One 400-kw. motor-generator set is being used to supply current. Electric locomotives from the company's interurban line will be used and the steam locomotives sold. The coal bill in the past has been about \$10,000 a year, the railway being used for hauling logs from the lake to the Fraser River.

For the first time in the history of Colorado a central station will provide energy for one of the major railroad systems. The Burlington railroad which is now engaged in the construction of a \$2,000,000 shop in Denver, has contracted with the Denver Gas & Electric Light Company for 2,200 hp. The electrical equipment for the big shop will cost between \$50,000 and \$60,000, it is understood. Power will be delivered over a 13,000-volt transmission line which will be constructed shortly.

Actual construction of the new lumber mill of the Booth Kelly Lumber Company at Wendling, Ore., has begun. The foundations will soon be in and it is planned to have the work completed by March 1, 1923. A contract for the electrical installation work was recently awarded to the West Coast Engineering Company of Portland.



The Archway of Jewels was placed at the entrance to the Rocky Mountain Electrical Exposition held in Salt Lake City, Oct. 2-14. This arch was illuminated every evening of the exposition by a battery of twenty 18-in. searchlights. Thousands of people were attracted by this archway.

Salt Lake is Scene of Large Electrical Exposition

Rocky Mountain Electrical Men Feel That Displays Were of Great Value in Securing More Business

By M. L. CUMMINGS, JR.

Amid a blaze of electrical splendor such as has never before been witnessed in Salt Lake City, the Rocky Mountain Electrical Exposition was formally opened to the public, at 7:30 p.m. on Oct. 2.

With a few well-chosen remarks, in which he emphasized the wonderful functions of electricity as a servant to mankind, Mayor C. Clarence Neslen welcomed the large crowd. From that time until the closing on the night of Oct. 14, throngs of interested spectators were entertained each afternoon and evening.

The famous archway of jewels, illuminated each evening by a battery of twenty 18-in. searchlights, was a magnificent spectacle, and proved to be an immense factor in advertising the exposition. Its beauty and brilliance attracted the attention of large numbers of people.

Inside the spacious Bonneville pavilion the visitor was greeted with an array of electrical exhibits, about 55 in number, featuring household appliances of every description, industrial applications of electricity, radio, generation transmission of power, lighting demonstrations, etc.

Among the most interesting exhibits were the following:

The Utah Power & Light Company had a miniature reproduction of one of the company's largest generating stations, showing a section of the company's huge pipe line at Grace, Ida., together with a business district, street lighting system, electric railroad and other industries in the foreground, and a typical residence section and farming community. This exhibit was remarkably effective in telling the story of electric service.

The Union Pacific Railroad Company showed a miniature of the union station at Salt Lake City, in the foreground, demonstrating modern block signal operation, with a toy train used as a demonstrator, amid a scenic mountain and valley background. The use of electricity in the operation of the automatic block signal system was portrayed in a very interesting manner.

The General Electric Company was represented with an elaborate display of up-to-date electrical appliances and equipment. One of the features was an enclosed magnetic switch, controlled by push buttons, the switch being equipped with temperature relays, demonstrating the protection to an overloaded or overheated motor. An automatic compensator was also exhibited, as being especially adapted for use in an isolated plant with the control installed in the main office. An arc welding set, with automatic feed attachment, and the new detachable lighting fixtures, were also features of this exhibit.

The Westinghouse Electric & Manufacturing Company exhibited the latest in modern appliances, featuring electric cooking. A large "reel" type bake-oven was shown, with a capacity of 200 1-lb. loaves of bread per hour. At each corner of the booth were street lamps of the latest type.

The Mountain States Telephone & Telegraph Company exhibited a miniature model of the largest switchboard in the world. Here the visitor was given an opportunity to learn how his telephone calls are handled. All apparatus used in handling subscribers' calls and in equipping subscribers' service was shown.

The miniature electrical home exhibited by the Edison Lamp Works of the

General Electric Company was exceedingly interesting, and drew much favorable comment. Here was shown, complete in every detail, the interior of a tiny home. On one floor was a modern parlor, bedroom, bathroom and kitchen with correct lighting equipment, and on the upper floor the same rooms with an incorrect lighting system.

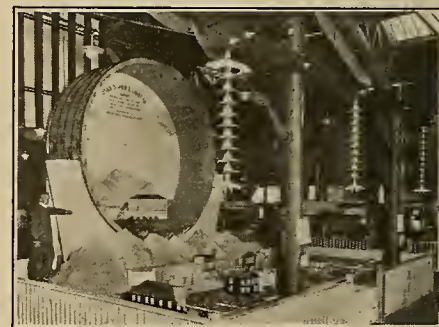
The booth of the Utah Copper Company displayed electrically operated milling machinery, featuring the Janney flotation process for the treatment of copper ores.

The Western Union Telegraph Company had a very interesting exhibit, showing the machines, in operation, which are used for automatic transmission and receipt of messages. This company also placed electrically operated clocks at various places around the auditorium showing the time in different cities of the world.

The Intermountain Electric Company featured radio in its exhibit, which drew considerable attention.

The Capital Electric Company, the Western Electric Company, the Mine & Smelter Supply Company, and many other firms all had notable exhibits. In fact, there was not an exhibit at the exposition which did not attract a good share of attention and favorable comment. Following is a complete list of exhibitors:

Edison Lamp Works of General Electric Company, Harrison, N. J.
United Electric Supply Company, Salt Lake City
Russell Electric Company, Chicago, Ill.
Utah Power & Light Company, Salt Lake City
Eureka Vacuum Cleaner Company, Detroit, Mich.
Capital Electric Company, Salt Lake City
Hurley Machine Company, Chicago, Ill.
Intermountain Electric Company, Salt Lake City
Dodge Brothers Electric Company, Salt Lake City
One Minute Manufacturing Company, Newton, Iowa
Thor Electric Shop, Salt Lake City
Holloran-Judge Trust Company, Salt Lake City
Mine & Smelter Supply Company, Denver, Colo.
B. & G. Electric Shop, Salt Lake City
Salt Lake Electric Supply Company, Salt Lake City
Woodrow Manufacturing Company, Newton, Ia.
King Manufacturing Company, St. Joseph, Mo.
American Steel & Wire Company, Chicago, Ill.
Wasatch Electric Company, Salt Lake City
Eardley Electric Company, Salt Lake City
General Electric Company, Schenectady, N. Y.
Z. C. M. I., Salt Lake City



The Utah Power & Light Company displayed this miniature reproduction of one of its largest generating stations, inside of a section of the pipe line used by the company. In the foreground is pictured a reproduction of an illuminated town. A sample of the company's transmission line poles is also visible.

The Rudolph Wurlitzer Manufacturing Company, North Tonawanda, N. Y.
Consolidated Music Company, Salt Lake City
Westinghouse Lamp Company, New York, N. Y.
H. G. Weeks Manufacturing Company, Hamilton, Ohio
Ohio Brass Company, Denver, Colo.



The exhibit of the General Electric Company. One of the features of this display was an enclosed magnetic switch, controlled by push buttons, the switch being equipped with temperature relays to demonstrate the protection given motors against overload or overheating. This can be seen at the extreme right of the picture.



Small appliances, an electric range and models of a concentrating table and a roller mill made up the exhibit of the Mine & Smelter Supply Company at the exposition. This company endeavored to convey the fact that it served the individual householder as well as the large industrial corporation.

Journal of Electricity and Western Industry, San Francisco, Calif.

Utah Copper Company, Salt Lake City
Coffield Washer Company, Dayton, Ohio
Automatic Washer Company, Newton, Ia.
Felt Electric Supply Company, Salt Lake City
Electric Vacuum Cleaner Company, Cleveland, Ohio

Western Electric Company, New York, N. Y.
American Wiremold Company, Hartford, Conn.
Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.
White Sewing Machine Company, Cleveland, Ohio

Robertson's "Easy" Washer Company, Salt Lake City
Pacific Electric Manufacturing Company, San Francisco, Calif.

Meadows Manufacturing Company, Bloomington, Ill.
Edison Electric Appliance Co., Chicago, Ill.
J. Ludvig Hansen, Denver, Colo.

Oregon Short Line Railroad Company, Salt Lake City

Altorfer Bros. Company, Peoria, Ill.
Salt Lake Hardware Company, Salt Lake City
Western Union Telegraph Company, Salt Lake City

Strevel-Paterson Hardware Company, Salt Lake City

Landers, Frary & Clark, New Britain, Conn.
Cullen Manufacturing Company, Salt Lake City
Columbia Stores Company, Salt Lake City

Bryan-Marsh Division, National Light Works of General Electric Company, Chicago, Ill.
Century Electric Company, St. Louis, Mo.

Stevens Sales Company, Salt Lake City
Rocky Mountain Electrical Cooperative League, Salt Lake City

Mountain States Telephone & Telegraph Company, Salt Lake City
Graphic Arts Association, Salt Lake City

The Rocky Mountain Electrical Cooperative League, under whose auspices

the exposition was held, was represented with a well-equipped information bureau and rest room, where the achievements and aims of the league were presented to the public in an interesting manner.

The following program, with some modifications, was carried out each day:

2:30 p.m.—Doors of exposition opened.

3:00 p.m.—Radio concert.

4:00 p.m.—Hall of Electrical Wonders, demonstrations by H. T. Plumb, of high-frequency, high tension current.

7:00 p.m.—Radio concert.

7:30 p.m.—Educational talks by experts on the use of electrical appliances in the home.

8:00 p.m.—Radio concert.

8:30 p.m.—Hall of Electrical Wonders, demonstrations by H. T. Plumb.

9:45 p.m.—Electrical experiments, by P. P. Ashworth.

10:00 to 12:00 p.m.—Free dancing, with orchestra music.

In the "Hall of Wonders" P. P. Ashworth, of the Utah Power & Light Company, and H. T. Plumb of the Salt Lake City office of the General Electric Company, entertained large audiences each evening with electrical experiments and "stunts." There was no additional charge for this entertainment, and it proved

to be one of the real features of the exposition. Some of Mr. Plumb's experiments were, setting fire to wood, paper, iron wires, etc., with sparks from the ends of his fingers; lighting of an incandescent lamp with current passing through his body; lighting vacuum tubes; artificial thunder and lightning; wireless transmission of light; and corona demonstrations.

During the second week of the exposition new amusement features were added, such as free dancing, special days and evenings being specified as Old Folks' day, Kiwanis Club day, Elks' day, Students' day, etc. This added to the public interest in the affair.

On Thursday evening, Oct. 5, a spectacular electrical parade was conducted. This was participated in by a large number of electrical interests and merchants in general, with electrically lighted floats, and proved to be a very successful advertising feature.

A public wedding, on the evening of Oct. 12, at the exposition, was an immense drawing card. The bride and groom were the recipients of \$300 worth of electrical presents, donated by various electrical firms.

An advertising and publicity program was launched about two weeks prior to the opening, and continued throughout the period of the exposition. This consisted principally of newspaper display advertisements, newspaper publicity stories, billboards, mailing stuffers, street banners, window cards, automobile signs, street car banners, moving pictures, radio announcements by Salt Lake City daily newspapers, circular letters, and cooperative advertising by various business firms.

There was a large attendance at the exposition, and intense interest was manifested by all the visitors. No expense or energy was spared by the members of the Rocky Mountain Electrical Cooperative League, and many other business interests, to make the show a success. It is felt by all concerned that the story of electricity has been admirably told—that the general public now has a better understanding of the subject, due to the many educational features introduced. The Rocky Mountain Electrical Exposition will pass into history as a most successful enterprise.



The interior of the Bonneville pavilion, the building that was used to house the exhibits of the members of the electrical industry participating in the exposition at Salt Lake City, at which central stations, electrical manufacturers, electrical dealers and jobbers, and public utility companies joined to make the exposition a success.

Events in Washington of Interest to Western Men

**A Survey of Recent Developments in the Nation's Capital by
Paul Wooton, Special Correspondent of the Journal
of Electricity and Western Industry**

Indications point to the successful outcome of the negotiations of the Colorado River Commission, which goes into what is believed will be its final session on November 9. Commerce Secretary Hoover has announced his intention to go to Santa Fe, New Mexico, for the meeting.

Since the commission has heard at length from representatives of all interests concerned with the use that may be made of the waters of the Colorado, it is felt that nothing can be gained by conducting further public hearings. For that reason the sessions at Santa Fe will be executive in character. The commission, however, does not want to close the door to anyone who may have further information to submit and has invited any such person to submit his views in writing to Clarence C. Stetson, the commission's executive secretary, at Santa Fe, in care of the office of the governor of the state.

Sufficient is known as to the attitude of members of the commission to forecast the successful outcome of the negotiations which are expected to mark an epoch in the economic relationship between the states. The work of the Colorado River Commission has presented all of the elements and most of the difficulties encountered in the drafting of an international agreement. If the work of the commission is successful, as now seems certain, the accomplishment will be of monumental importance to the seven western states concerned. As a natural resource, the Colorado possesses more commercial value to those seven states than do their combined mineral resources. This gives an idea of the immense importance which attaches to the peace treaty which will make possible a comprehensive policy under which the utilization of the river's potentialities may proceed unhampered and freed of its present uncertainties.

Federal Power Commission

So that the water-power resources of the country may not be tied up by those who are not in a position to carry forward their development, the Federal Power Commission is disposed to cancel any preliminary permit where the permittee fails in any way to comply with its terms. It is being argued by some permittees that it is an unnecessary hardship to require them to spend several thousand dollars annually of their money making stream flow observations and collecting other engineering data, during the period that the outcome of the financing still is in doubt. It is contended that this is an unwarranted hardship which simply makes more difficult the task of developing the project. The commission, however, does not accept that contention. It recognizes that no reliable financial establishment would consider the financing of a project without the engineering data called for by the average preliminary permit. The commission expects in the future to revoke all permits where stream gaging and other engineering investigations are not pursued.

With the depreciation and accounting regulations on the road to solution, the

staff of the Federal Power Commission now is turning its attention to the headwater improvement regulation. Every effort will be made to secure the best thought in the industry in the formulation of this very important regulation. Fully as much gray matter must go into the drafting of that regulation as has been required in the formulation of the two other regulations mentioned.

Under existing conditions, the one who creates a headwater benefit gets nothing from it unless he can arrange a working agreement with the projects further down. The ideal condition, it is pointed out at the Federal Power Commission, would be to have each river developed by a single concern. Since this is manifestly impossible, a plan must be worked out whereby reservoirs can be operated to the maximum advantage of several projects.

The importance of this regulation is better understood when it is considered that it will apply to a very large number of streams among which are the San Joaquin, Mississippi, White, Grand, Green, Columbia, Klamath, Deschutes, Feather, Yuba, Stanislaus, Merced, Kings and Kern.

There is acute need at this time on the San Joaquin River for the determination of the commission's headwater policy. The headwaters of that stream have been improved by the Southern California Edison Company. Below this large reservoir system, now partly constructed, the San Joaquin Light & Power Corporation has an important plant. The operation of that plant could be materially affected by the handling of the reservoir system.

The preliminary permit of James B. Girand covering a development on the Colorado River was extended by the commission until March 19, 1923. Mr. Girand's permit was granted July 19, 1921, and was to expire July 19 of this year. It was extended until October 19. These extensions have been necessary because of objection on the part of the Reclamation Service. As a result of the work being done by the Colorado River Commission, it is hoped that a comprehensive policy will be developed for the use of the water in the Colorado River. By extending the permit until March 19, it is believed that sufficient time has been allowed during which the report of the commission will become available.

The application of the late William Park Mills covering a project on the Vermillion River in the Cabinet National Forest was rejected. Preliminary permits to Ed Fletcher, of San Diego, were authorized, covering a 3,600-hp. development on Santa Isabel Creek in the Cleveland National Forest and a 900-hp. development on Boulder Creek in the same forest.

Denver radio dealers have organized the Intermountain division of the National Radio Jobbers' Association for the purpose of stimulating interest in radio and the development of better business. J. L. Hursch of the Reynolds Radio Company has been elected president of the organization.

New Electrified Railroad Seeks Recognition from I. C. C.

An application has been made to the Interstate Commerce Commission by W. E. Staley, president of the Staley System of Electrified Railways, which will operate in Colorado, New Mexico and Arizona, for the requisite authority to retain the excess earnings as allowed newly constructed lines. In this petition Mr. Staley sets forth that he plans to construct an electrified railroad with 950 miles of main line and 225 miles of branch lines to serve points between the southeastern border of Colorado and a point on the Gulf of California. The petition sets forth that the principal purpose of the line is to transport coal and coke from the Gallat-Durango fields of Colorado to the mining and metallurgical industries of southern Arizona.

The proposed line intends to serve the following places: Durango and Cortez in Colorado; Luna, Grants, Bluewater, Farmington and Aztec in New Mexico; Tucson, Casa Grande, Phoenix, Florence, Winkelman, Safford, Solmanville, Clifton and Metcalf, in Arizona.

The petition points out that the country to be traversed is rich in mineral, forest and agricultural resources. The line is intended to furnish an outlet for their products to tidewater.

Oregon Changes Policy Regarding Rural Line Extensions

A new policy for the rural line extensions made in Oregon was announced on Oct. 14 by the Public Service Commission of that state. The new policy, which is the result of months of study, is intended to encourage the extension of electric lines into the farming sections.

By the new ruling, all power companies making rural extensions are required to expend an amount up to four times the annual charge for service for each customer to be served by the extension. If the cost exceeds this amount the customer will pay the difference.

Receipts from future additions to the extension are to be rebated pro rata to the original groups of customers. The cost of the extension will include all labor, material, and other expense for the distribution and installation of poles, wires, crossarms, insulators, line hardware, protective equipment and transformers used in the construction of the extension. Metering equipment is not to be included.

Klamath River Project Granted Permit by Commission

A preliminary permit extending over a period of two years has been granted the California Oregon Power Company of Medford, Ore., for a large power development of the Klamath River at the junction of that river with the Salmon. It is the plan of the company to develop about 120,000 hp. at the new site.

Work on this development should be aided materially by the new road which has been built by the United States Bureau of Public Roads. This road connects the Sacramento Valley and the coast region going by way of the Klamath River route.

MEETINGS

Engineers of Portland Announce Meetings for Coming Year

The Portland section of the American Institute of Electrical Engineers and the National Electric Light Association, which hold joint meetings, have an active year's work ahead. At their last meeting, held at the University Club, G. B. Hegardt, engineer for the Commission of Public Docks, gave a very instructive talk on the activities of the commission and Portland as a port.

J. D. Scott, who heads the program committee, has announced the following speakers for the remaining meetings of the year:

December meeting—W. A. Hillebrand, engineer with the Ohio Brass Company at San Francisco, will deliver a paper on the subject of insulating materials and high tension phenomena.

January meeting—T. H. Sherrard, supervisor of the Oregon National Forest, will talk on some phase of the forestry work in this district.

March meeting—W. J. Kerr, president of the Oregon Agricultural College, will talk on a subject not yet announced. Other speakers will be announced later.

Oakland Electric Club Dedicates Claremont Substation

The Oakland Electric Club officiated at the opening of the new Claremont substation of the Pacific Gas & Electric Company in that city on October 23, when the station, one of the largest of its kind in the world, was officially dedicated. Placing of the station in operation was an event of more than ordinary importance to the social and industrial life of the San Francisco Bay district because it is here that the power from the recently completed first units of the Pit River development will be received for distribution.

The program at the substation included short addresses by Wigginton E. Creed, president of the company, and John A. Britton, first vice-president and general manager.

Verdugo Hills Rancho, near Los Angeles, was recently the scene of a highly successful picnic given under the auspices of the Electrical Contractors and Dealers' Association of Los Angeles. Over 500 members of the electrical industry of Los Angeles and southern California participated in the affair.

New York Engineer Warns of Dangers of Water Power Act

Characterizing the proposed California Water and Power Act as "Remarkable political bunk," W. S. Murray, consulting engineer of New York City and co-author of the Murray and Flood report on the Ontario Hydro Electric Commission, assailed the measure before a meeting of the San Francisco Electrical Development League on October 23.

Mr. Murray declared that the passage of the measure would not make for the prosperity of the state of California nor of the nation as a whole. He emphasized many of the arguments against the act which are already familiar to the electrical industry of California and gave some interesting sidelights on government operation of utilities as it exists in Canada.

Utah Contractors and Dealers Organize New Association

The Contractor-Dealers' Association of Utah, with headquarters in Salt Lake City, has been reorganized, and is now known as the Utah Association of Electricians.

The following officers have been elected for the ensuing year: George R. Randall, Salt Lake Electric Supply Co., president; G. W. Forsberg, Wasatch Electric Co., vice-president; Blaine Gray, B-G Electric Co., secretary; C. R. Dodge, Dodge Bros. Electric Co., treasurer.

Noon luncheon meetings of the new association will be held on Tuesday of each week. It is planned to launch an advertising campaign in the near future, to promote the business of the contractor-dealer.

The University of Utah chapter of the American Association of Engineers is launching a campaign for larger membership. George McLeese has been chosen campaign manager. The purpose of the chapter is to bring engineering students in close contact with engineering problems and engineers of prominence.

Eighteen district managers from Oregon, Washington and Idaho, and 19 other officials of the Pacific Power & Light Company took part in the annual convention of that company which was held at Hood River, Ore., on Oct. 17.

Tacoma Wins in Suit for Lake Cushman Power Site

The city of Tacoma won in its condemnation suits in connection with the development of the proposed Lake Cushman power project, when the Supreme Court at Olympia recently upheld the city's authority to condemn state lands for public use and to appropriate the entire flow of the north fork of the Skokomish River for hydroelectric purposes.

The decision reversed Judge Wright of Mason County, who held that the city could not condemn state lands and ordered the case dismissed. The chief contention of the state was that the city could not condemn public lands held by the state for public use. The city showed that since 1901 the state has maintained a salmon eyeing station, although the station has not been used since four months after it was built. There has been no act or declaration of intention on the part of the state to use the station since that year, and the mere fact that the state owns property and has the right and power to devote it to public use, is not sufficient to estop the city, the court held, inasmuch as the city's proposed use is immediate and public. The court also found that the proposed diversion of the entire flow of the north fork of the stream would not be damaging to the state, but possibly be beneficial by preventing floods of the main stream at the Skokomish hatchery site.

According to Commissioner Ira S. Davisson, Tacoma engineers will begin work on plans and specifications immediately for the Cushman power site, as soon as the steam generating plant on the waterfront has been completed. Plans for the entire project will be prepared, although it is planned to develop only one unit at the present time. This unit will include a power station at the dam, with a transmission line into the city, costing about \$3,000,000 and requiring approximately 18 months to build.

Portland Chamber of Commerce Plans Broadcasting Set

Plans for a broadcasting station are being worked out by the Portland Chamber of Commerce, and this may lead to an installation of a 500-watt station which will be capable of transmitting the spoken word from the Chamber dining room to receiving stations in Honolulu and Alaska, as well as to all parts of the Pacific slope.

Seventy-five Chambers of Commerce in Oregon alone have signified to the radio dealers their intention of installing receiving sets if a large broadcasting station is established in the Portland Chamber of Commerce.

Under the construction plan of the Union Pacific Railroad, which involves an expenditure of about \$5,000,000, several hotels will be built in Utah which will entail an outlay of nearly \$2,000,000. The plan involves the taking over of the Cedar City hotel, started by commercial organizations of the city, the construction of hotels at Zion National Park and Bryce Canyon, and a similar structure at Cedar Breaks.

COMING EVENTS

COLORADO RIVER COMMISSION

Special Meeting—Santa Fe, N. M.—Nov. 9, 1922

NATIONAL ASSOCIATION OF RAILWAY AND UTILITY COMMISSIONERS

Annual Convention—Detroit, Mich.—Nov. 14, 1922

ELECTRICAL SUPPLY JOBBERS' ASSOCIATION

Annual Convention—Cleveland, Ohio—Nov. 20-24, 1922

PACIFIC DIVISION, NATIONAL ELECTRICAL SUPPLY JOBBERS' ASSOCIATION

Quarterly Meeting—Hotel Coronado—Dec. 7-9, 1922

Walter F. Brown, general traffic manager of the Mountain States Telephone & Telegraph Company, with headquarters in Denver, was elected president of the Colorado Public Service Association at the recent Glenwood Springs convention. This is the first time in several years that a telephone man has been chosen to head the organization. Mr. Brown started with the Bell System



WALTER F. BROWN

in New York City in 1893 after graduating from Yale. Several years later he was transferred to Colorado and since 1900 he has been continually on the climb. Successively he has been manager of the operating department, superintendent of traffic, assistant general manager, division general manager, traffic superintendent, and in his present position of general traffic manager. He was prominent in the affairs of the former Colorado Electric Light, Power and Railway Association and during 1920-1921 was chairman of the electrical bureau of the Denver Civic and Commercial Association. According to the Mountain States Monitor, "Walter F. Brown is probably the best known traffic man in the company. He's a hale fellow, well met—he's a real fellow—is Walter F. Brown."

Norman Olson, special factory representative of Pal-O'-Mine Washing Machine, St. Louis, which is being distributed by Listenwaller & Gough for southern California, is now in this territory demonstrating and exhibiting this new machine to the trade. Mr. Olson was for a number of years, assistant sales manager of the Eden Electric Washing Machine Company.

Delos F. Wilcox, electrical engineer and valuation expert, has been retained by the city of Denver to obtain data to be used in the various suits now pending between the city and the Denver Tramway Company.

Roy G. Munroe, assistant commercial manager of the Denver Gas & Electric Light Company, has been appointed the representative of the Rocky Mountain division on the commercial national section of the N.E.L.A.

J. Fischer, E. A. Scott, and J. W. Hancock comprise the committee appointed by President Clarence Keeler of the Denver Association Electrical Contractors and Dealers to investigate the advisability and the securing of a field man for that organization.

Personals

Percival Chambers is now connected with the sales department of the Western Electric Company's Los Angeles office. Mr. Chambers was for a number of years connected with the American Locomotive Works of New York.

D. W. Pontius, vice-president and general manager, Pacific Electric Railway; E. C. Thomas, special representative, executive department, Pacific Electric Railway; L. J. Turley, maintenance of way engineer, Los Angeles Railway; George Baker Anderson, manager of transportation, Los Angeles Railway; C. M. McRoberts, claim agent, Los Angeles Railway; and K. E. Van Kuran, district manager, Westinghouse Electric & Manufacturing Company, are among the prominent Los Angeles electrical men who attended the convention of the American Electric Railway Association in Chicago.

Frank Gerhardt, Pacific Coast representative of the Crouse-Hinds Company, is in Los Angeles on business in the interests of his company.

Ben C. Holst, western manager of the W. N. Mathews Bros. Company, is a Los Angeles visitor.

B. F. Jakobsen, formerly chief designing engineer of the San Joaquin Light & Power Corporation, Fresno, has severed his connection with that organization and opened offices in Fresno as a consulting hydraulic and electrical engineer. Mr. Jakobsen was for five years with the United States Reclamation Service on the Salt River project, including the Roosevelt dam and the Elephant Butte development. He left this service to take part in one of the largest power developments in South America, that of the Cerro de Pasco Mining Company in Peru. This development is the highest in the world, having a power house at an elevation of 12,000 ft. and transmission lines running up to an elevation of almost 16,000 ft. in the Peruvian Andes. Later he spent several months in Europe, studying the power developments in France, Germany and Sweden. He was also connected with the electrification of the properties of the Homestake Mining Company in South Dakota. While with the San Joaquin Light & Power Corporation he designed the Kerckhoff dam and power development and the Kern River development. He is a member of the American Institute of Electrical Engineers, American Society of Civil Engineers and the American Association of Engineers.

Walter Hays, formerly in charge of construction of the 165,000-volt transmission line of the Great Western Power Company in its Caribou development, is now in charge of transmission line construction for the Modesto-Turlock Irrigation District's transmission and distribution system which is being built in connection with the Don Pedro Dam.

T. E. Bibbins, president, and D. E. Harris, vice-president and sales manager of the Pacific States Electric Company, San Francisco, are making a tour of eastern business centers.

Albert B. Fall, Secretary of the Interior, is spending several weeks in the West, inspecting the work of the Interior Department.

A. E. Rimpau, formerly of the Pacific States Electric Company, is now manager of the lamp department of the firm of Listenwaller & Gough, Inc., Los Angeles. The company has just added Westinghouse lamps to its line.

J. H. Jamison, specialty salesman of the Westinghouse Electric & Manufacturing Company, has just left for a six weeks' trip to the Westinghouse appliance factory at Mansfield, Ohio, and while in the East will visit the main factory of the company at East Pittsburgh.

D. W. Proebstel, chairman of the Portland section of the American Institute of Electrical Engineers, for the coming year, is a well known figure among electrical men of the Northwest, where he has spent the greater part of his time since graduating from college. Leaving the Oregon Agricultural College in 1905 with the degree of B.S., he entered the testing department of the General Electrical Company at Schenectady where he spent a year and a half. After several years with the Portland Railway, Light & Power Company as construction foreman, he entered the special civil service of the U. S. Engineers stationed in the Philippines. While there he had charge of the installation of electrical material used in the fortification work on Corregidor Island, Manila Bay. The summer of 1912 found him at Juneau, Alaska, as electrical superintendent for the General Electric Company, in charge of the installation of a hydroelectric plant for the Alaska Treadwell Gold Mining Company. Upon his return to Portland in 1913 he entered the employ of the Northwestern Electric Company, with which company he held various engineering positions



D. W. PROEBSTEL

until 1918. Since this time he has been with the Portland Railway, Light & Power Company, devoting his time principally to the re-design of 33-cycle equipment to operate on 60 cycles. Mr. Proebstel's election to the chairmanship of the Portland Section of the Institute is the culmination of his many years of activity in association affairs in the Northwest.

P. P. Pine, of the San Diego Consolidated Gas & Electric Company, has just recently returned from a three months' trip to Europe. He visited London, Paris, Berlin, Brussels and Rome and was fortunate enough to witness the Oberammergau Passion Play.

P. G. Gough, of Listenwalter & Gough, Los Angeles, announces the appointment of C. O. Gaffney, formerly store manager of the Granger Electric Company, Santa Ana, as special representative in charge of Royal vacuum cleaner sales in territory outside the city of Los Angeles. P. A. Horton has been appointed special representative in charge of Royal vacuum cleaner sales in Los Angeles, and G. W. Rethschult as special representative in charge of sales for the new washer Pal-O'-Mine which has just been added to the company's line.

D. C. Barnum, formerly district manager of the St. Louis Brass Manufacturing Company, is now connected with the Meyberg Fixture Company of Los Angeles.

A. M. Frost, formerly Fresno district manager of the San Joaquin Light & Power Corporation, has been appointed to the newly created post of sales manager of that company and in the future will have charge of the selling program of the company in connection with new business. His new duties will take him into the various districts served by the San Joaquin Light & Power Corporation and the Midland Counties Public Service Corporation, where, in an advisory capacity, he will work in conjunction with the district managers in promoting the sale of electricity. Mr. Frost has been with the San Joaquin company since 1911, his first position being that of manager of the Paso Robles district. While in this position he obtained a right-of-way for the first high tension line to be built on the coast. He was later transferred to Santa Maria as



A. M. FROST

manager, remaining there until 1914 when he went to Selma as manager. He left the company in 1920 to enter business for himself selling and installing electric pumping plants. He returned about a year ago as manager of the Fresno district. His long experience in dealing with the public along electrical lines admirably fits him for the broader scope of the new position.

E. C. Headrick, chairman of the Electrical Cooperative League of Denver, after attending the Association Island conference visited at his old home in Pennsylvania and then went to Cincinnati for the annual convention of the National Association of Electrical Contractors and Dealers.

Miss Margaret E. Gavin, secretary and treasurer of the New England Electric Company, Denver, known usually as "M. E. Gavin," was the only lady attendant at the recent Davis-McIntyre dinner meeting in that city.

Major C. E. Larsen of Denver, head of the Larsen Plumbing, Heating and Electrical Co., is a member of the general committee arranging for the Armistice Day celebration in that city.

W. F. Raber, general manager of the Southern Colorado Power Company, has been appointed a director of the Pueblo (Colo.) flood conservancy district.

A. H. Dimock, former Seattle city engineer, has opened offices at 418 Central Building, where he will engage in municipal, hydraulic, hydroelectric, waterworks and sanitary engineering. Mr. Dimock has for the past 25 years been connected with the engineering department of the city of Seattle and since 1911 has been city engineer. During his service with the city, his office has helped to plan and carry out \$50,000,000 worth of public work. Under his direction, the main trunk sewer systems of the city were laid out, and he outlined the enlargements and developments of the city water system. In addition, he planned the preliminary work in connection with the Skagit River hydroelectric power development.

W. L. Winner, head of the radio section of the Colorado National Guard, opened a school of instruction for radio telephone operators recently in Denver.

D. E. Bent, president of the New Mexico Utilities Association, and manager of the Tucumcari Light & Power Company, has just completed a tour of the utility properties in New Mexico.

Herbert T. Rea, for the past three years district manager of the Oakland office of the Pacific States Electric Company, has just recently arrived in Los Angeles to take over his duties as assistant manager of the local office of that company.

L. W. Wallace, executive secretary of the American Engineering Council of the Federated American Engineering Societies, is a recent Pacific Coast visitor. During his sojourn on the Coast he addressed a number of Western Universities, among them Leland Stanford Jr. University, on the ideals of the engineer.

R. E. Fisher, vice-president in charge of sales of the Pacific Gas & Electric Company, and one of the directors of the California Development Association, has been appointed chairman of the Coordination Committee of that organization. This committee has defined a plan of action for the association for the coming year in which it recommends that accurate data relative to the agricultural, industrial and financial resources of the state be compiled; that ways and means be devised for bringing about an influx of agricultural and industrial settlers and that a bureau be organized to furnish assistance in building up the existing Chambers of Commerce in the state.

Leonard A. Hobbs, formerly with the Western Electric Company, has just assumed his new duties as western district manager of the St. Louis Brass Manufacturing Company and the Brascelite Company with headquarters in Los Angeles. Mr. Hobbs has been connected with the Western Electric Company since March, 1913, during which period he was a salesman in the supply



LEONARD A. HOBBS

department, then for three years, lighting specialist, and for the last three years has been specialty sales manager of the Los Angeles office. His efforts with the Western Electric Company have been such as to attract the attention of a great number of eastern manufacturing concerns, and have resulted in his recent appointment. Mr. Hobbs will have charge of California, Arizona, New Mexico and part of Texas for the St. Louis Brass Manufacturing Company.

Ross Hartley, president of the Electric Corporation of Los Angeles, has departed for a number of Eastern cities where he will visit some of the largest electrical manufacturing concerns in the interests of his organization. He expects to go to Chicago, New York and New Britain, Conn., where he will inspect the plant of Landers, Frary & Clark.

C. P. Osborne, superintendent of light and power of the Portland Railway, Light & Power Company, is a recent San Francisco visitor.

H. H. Courtright, manager of the Valley Electrical Supply Company of Fresno, is a recent San Francisco visitor.

Obituary

John S. Lucock, for the past fourteen years superintendent of the Detroit Insulated Wire Company, died on October 10 at his home in Detroit. Mr. Lucock was 57 years old. He was a native of England and came to this country at the age of 18. For many years he was connected with the Western Union Telegraph Company and in 1903 became superintendent of the National Cable and Wire Company in Pittsburg. In 1906 he became connected with the Detroit company.

M. Sweyd, Pacific Coast representative for the Lionel Corporation of New York, manufacturers of toy electric trains, announces that a full stock is now on hand at the company's headquarters, 180 New Montgomery St., San Francisco. The new stock has been arranged with the view of facilitating Christmas deliveries to dealers.

The Los Angeles Gas & Electric Corporation on Monday, Oct. 23, celebrated its fortieth anniversary, as on Oct. 23, 1882, the Los Angeles Electric Company was organized and furnished the first electric service in the city of Los Angeles. In 1904 the present corporation, known as the Los Angeles Gas & Electric Corporation, was formed. In celebrating their anniversary, it is of particular note that just 25 years ago on New Year's day, E. R. Northmore, present superintendent of distribution, found time to read all of the meters on the system at that time and still have time to get married.

Listenwaller & Gough, Inc., of Los Angeles, have just added the Westinghouse Lamps to their line and have also become distributors for southern California and Arizona for the Pal-O-Mine Washing Machine. Mr. Gough reports that this washer is an oscillating type and expects it to lead in sales in this territory.

The Los Angeles branch of the Western Electric Company has just sold a Western Electric radio broadcasting station to the Los Angeles Times. This will be one of the most powerful broadcasting stations in the country and will give the Times the distinction of being one of the leaders in the world in the broadcasting of radio news and concerts.

The General Electric Company has received orders for the three months ending Sept. 30 amounting to \$58,914,620, an increase of 42 per cent over a similar period in 1921, according to a statement made on Oct. 14 to stockholders by President Gerard Swope. For the nine months ended Sept. 30 orders were \$176,171,194 or an increase of 30 per cent over the same period in 1921.

The National X-Ray Reflector Company, of Chicago, has installed F. S. Mills as western manager in the new lighting studios of the company in the Pacific Finance Building at Los Angeles. A San Francisco office in the Mo-nadnock Building has also been opened.

F. M. Webber, who for the past three years has conducted an electrical appliance business in Philadelphia, has accepted a position with the Robbins & Myers Company as assistant sales manager in charge of motor sales, filling the place recently vacated by A. J. Reed, who has resigned. Mr. Webber was for sixteen years connected with the General Electric Company, entering the employ of the Ft. Wayne Works in 1903. From 1913 to 1919 he was apparatus sales manager of the St. Louis office of the General Electric Company.

Edwin L. Wiegand Company, Pittsburgh, Pa., has placed on the market a line of electric range lids complete with adaptor to be used in connection with electric ranges or for converting gas, oil or coal ranges into electric units. These adaptors contain their standard heavy duty "Chromalox" units, the resistor of which is embedded in the cast iron top under hydraulic pressure and

held rigidly in place by an insulating compound which is also a good heat conductor. The adaptor is made of cast iron to withstand rough abuse with all terminals well insulated and completely covered to prevent trouble from grounds or short circuits. Each unit is designed for three heats with wattages ranging from 660 to 2,000, and several different sizes. The adaptors are so designed that three legs can be attached by means of thumbscrews, with a three-heat switch substantially fastened to make a sturdy utility stove for home, office, hospital, industrial or other desired uses.



MISSED!—!—!—!—!

Evidently Charlie Osborne's early training in golf taught him to keep his eye on the ball all of the time. He has just completed a wonderful stroke, but from the picture we would judge that he merely fanned at the ball and perforce the golfer's eyes have not advanced from the tee. The camera was too slow to catch the movement of the club, but a time exposure would have caught the ball without a blur. Quoting from Mr. Osborne immediately after the pictured stroke, "Makers of these *!***!*** pft etain shrdlu etain shrdlu lulu pftpftpft." (On reading proof we find that the linotype jammed and refused to print the remarks.) Regardless of his remarks, the arrow clearly indicates the location of the ball after the execution of the perfect(?) stroke. Thereupon Charlie retired to the office of C. P. Osborne, superintendent of light and power of the Portland Railway Light & Power Company, and did a man-sized day's work.

The P. D. Whitaker Farm Lighting Company, of Denver, is now handling the farm power plants produced by the Western Electric Company.

J. W. Hancock of Denver, manufacturer of the Columbalite on which all patents were recently allowed, is now featuring on this lighting unit a corrugated reflecting band of porcelain faced metal.

The Apex Electrical Distributing Company of Cleveland, has appointed the North Coast Electric Company as distributors for its products in the states of Oregon and Washington. The North Coast company maintains houses at Seattle, Spokane and Portland and it will distribute the complete line of the Apex company, consisting of the Apex Electric Suction Cleaner, Rotarex Electric Clothes Washer, and the Rotarex Home Double-roll Ironer.

The Benjamin Electric Manufacturing Company of New York, Chicago and San Francisco, has recently issued an insert leaflet describing the Benjamin 1080 Tap-lite plug and the dispenser-display card furnished with the plugs. The Sprague Electric Works of the General Electric Company has published for distribution Leaflet No. 67901 dealing with the safety type panel boards type T.P.S. manufactured by the company. Illustrations of the parts of the panel are presented.

The Century Electric Company, St. Louis, Mo., has issued Bulletins No. 28, 29, 30 and 31 which deal with the motors made by the firm. In the above order the bulletins describe, Century Polyphase motors Type AS; Century Single Phase motors Type RS; Century Polyphase motors Type SC; and Invincible Split Phase motors Type SP. Each booklet contains description and full details concerning the motors and their applications.

The Trumbull Electric Manufacturing Company of Plainville, Conn., has published Bulletin No. 4, which gives full description of the company's line of Circle T switches. Dimensions of all switches manufactured by the company are contained in the booklet along with views of the switches in actual use.

John F. Ryan, sales manager of the Western Electric Company, Portland branch, recently placed an order for 86 Western Electric Crawford 7,500-watt ranges to be installed in the Sovereign apartment house, by the Portland Railway Light & Power Company.

George A. Richards & Company, of Chicago, are conducting a window trim contest which closes Nov. 30. Thirty-nine prizes are offered by the company for the window judged to be the best from the point of view of attractiveness and selling appeal. The contest is open to all stores selling electrical goods. Judges will be Stanley A. Dennis, editor, Electrical Retailing; Frank Stockdale, president, Stockdale Service, Inc., and James H. Pickens, lecturer in advertising at Northwestern University and School of Commerce. The winners will be announced early in December.

The Joslin Dry Goods Company, one of the four large department stores in Denver, has added an electrical department which is being featured weekly by special window displays, a new department for department stores in that city. Standard heating appliances, hollow ware, and vacuum cleaners are being handled.

The Westinghouse Electric & Manufacturing Company has recently perfected an electric solder pot which has a three heat control. The advantages claimed for this pot over the gas heated one are that it can be attached to any electrical outlet and absolute heat regulation can be obtained from the new device.

TRADE OUTLOOK

SAN FRANCISCO

With few exceptions, conditions in all lines of retail trade are better than they were a year ago and collections are picking up. The seasonal slump is over and business is already feeling the stimulus of the fall buying. Crop returns are coming in and the farmer has entered the buying field. Large crops and good prices have placed the farmer in a favorable position for the first time in several seasons.

Continued building operations are reflected in the sales of wiring supplies and fixtures. Power company extensions are absorbing a quantity of line material and hardware.

Appliance sales have been stimulated appreciably by the exhibits at the California Industries Exposition and the electrical home in Oakland. Preparations are being made for a strong holiday trade. Various cooperative agencies are again planning to emphasize electrical gifts for Christmas.

Range sales are active as the result of definite campaigns both on the part of manufacturers and central stations. An order has been received for 86 ranges for one apartment house in Portland. Sales in Fresno are reported to be averaging 75 ranges per month. The campaign launched by the Pacific Gas & Electric Company is expected to place large numbers of ranges in the bay territory.

SEATTLE

General business conditions are very satisfactory in this district, although bankers, manufacturers and all conservative business men point out the continued necessity for economy and vigilance in business operations in all lines. Department stores report a very satisfactory seasonal volume of sales. Sales and shipments of lumber have sagged sharply during the past two weeks, because of railroad car shortage, although production was well maintained. Local railroad officials expect the present car shortage to continue acute for a month or more, but express the belief that the peak has been reached, and that any change will be for the better. The Washington Department of Public Works has appealed to the Interstate Commission to take over control of the car situation, and extend relief to western shippers.

Electrical dealers report a very busy fall season to date. The Electrical Week observed in Seattle has been extremely instrumental in stimulating interest in electrical installations among prospective home builders, and contractors report continued inquiries on various electrical problems in the home. Reports from Tacoma indicate that the Electrical Show held in that city resulted in a large number of sales direct, and also in numerous inquiries to electrical men.

Household appliances—demand good for all lines, and prospects for holiday trade are being developed.

Motors—fairly good demand for mo-

tors, although most sales are for the smaller types.

Washers—demand for all types is excellent. Numerous firms employing house-to-house canvassers, and many sales directly traceable.

Vacuum cleaners—sales on these are steadily increasing.

Heaters—sales on these very slow, due to unusually fine weather, but past week of inclement weather resulted in revival of interest in all types of heaters. Collections in all lines satisfactory.

LOS ANGELES

Building activities for the month of October are keeping up at a tremendous pace. For the first half of the month, the number of permits issued was 2,781, and the estimated valuation, \$6,803,537. This represents an increase of approximately 20 per cent over the previous month. It is not probable that permits for any large projects will be issued this month, but if the present pace keeps up, ordinary building operations will probably set a new high monthly record.

Manufacturers and jobbers continue to report large volumes of sales of electrical supplies and apparatus, and the outlook for an increase in this business is very encouraging. Owing to the coal situation being relieved in the East, manufacturers of steel conduit are getting under production and the local situation on conduit is easing up materially, though the manufacturers are not able to supply the large quantities that are demanded in this section owing to the immense amount of building that is now going on. Retail dealers report considerable activity in the sale of both large and small appliances and with the advent of cold weather, the retail business is expected to receive a considerable boost.

SALT LAKE CITY

Open fall weather conditions are very favorable to continued building activity, and considerable construction work is being done, both in the building of homes and various other lines of construction.

Good crops are being harvested, and this, together with the fact that the wool growers have received good returns, is placing considerable additional money into circulation. Collections are fair, with a more marked improvement expected when sugar beet farmers obtain their money from the sugar companies, which will be about the middle of November.

There is practically no unemployment in Utah, due to additional help being required by various industrial plants, mines and sugar factories. Railroad shops are operating with nearly normal forces.

Both the coal and metal mines are operating at a very satisfactory pace. It is said that at no time in its history has the metal mining industry faced a brighter future.

Retail merchants report business as fairly satisfactory, with continued improvement expected.

Electrical jobbers report some improvement in business, with a feeling of considerable optimism for the future.

The house-wiring business is active, and appliances are moving fairly well. The cool fall evenings have created some demand for air heaters. Seasonal conditions enter into the movement of some kinds of appliances, such as ranges, air heaters and vacuum cleaners.

In general it may be said that business conditions are steadily improving.

PORTLAND

Business generally is good, with many indications of still better things ahead. The lumber industry continues at a good pace with some shifting in the demand. The bulk of the demand early in the season came from the retail lumbermen who supplied the home builder. This class of business has declined recently and in its place has come an increased demand from industrial consumers, especially for timbers, car materials and ties, as well as finished lumber for homes. Production of logs and lumber is 10 per cent above normal with orders somewhat below production. Ten cargoes of lumber were booked last month for Australia with twenty to all other ports.

The car shortage has caused some inconvenience to shippers, especially to those in outlying districts. This, together with a recent lowering of ocean freight rates on lumber and general cargo, has resulted in an increase in water transportation. Fruit growers are not obtaining refrigerators in sufficient numbers with no immediate relief in sight. Considerable loss may result.

Building continues at a good clip with full advantage being taken of the favorable weather. Unemployment is practically non-existent.

Electrical jobbers report business continuing good with ample stocks on hand in almost all lines. Collections are improving.

DENVER

Colorado business is humming. Employment conditions are rapidly improving, record building programs are under way and nearly every line of industry is prospering materially. Only in the eastern part of the state is there any discouragement and that is due to the poor crops and the lack of transportation facilities. However, railroad service is improving rapidly and with continued improvement in other basic factors it is generally believed that prosperity is again entrenched.

Electrical jobbers report increasing volume of sales in wiring supplies, especially conduit and armored cable. Heavy demand for porcelain has been satisfied through recent deliveries. Appliance sales are picking up, especially radiant heaters, due to frosty mornings and recent snow flurries. Vacuum cleaner sales have not been up to October schedule. Outside of Denver a special campaign on toasters has obtained unusual results. Demand found in territory for electric ranges but situation in Denver is especially quiet due to industrial gas campaign.

CONSTRUCTION NEWS

Bridges

Alaska, Juneau—The erection of a suspension bridge, single 180-ft. span, across the Mendenhall River, is included in five such structures on which work will be launched this fall and winter by the Alaska Road Commission. The Mendenhall bridge will be put in on the Auk Lake loop of Glacier Highway. Other bridges to be done are the Chatanika River bridge to be built at the mouth of Komomo creek on the Catanika Mill House-Circle route; one across the Salatna River; erection of sheet steel piling and approaches to the Nizina River bridge; and replacing portions of the old bridge across Tazlina River with new sections.

Calif., San Pedro—Chamber of Commerce and local organizations, residents and industrial concerns are trying to secure a pontoon bridge over the Long Beach channel connecting the mainland and Terminal Island industries and docks, during the period that the steel bridge is being built over Cerritos Channel at Badger Ave. Harbor Engineer Ludlow estimated the cost at \$20,000. It can be built and placed in operation in four months.

Calif., Los Angeles—Ross Construction Company, Oschner Building, Sacramento, has been awarded contract by Harbor Commission at \$542,000 for constructing Badger Ave. double leaf bascule bridge. The bridge was designed by the Strauss Bascule Bridge Co., Chicago, and involves 2,270 tons structural steel and 100 tons incidental steel. Ross company's time limit is 100 days. San Francisco Bridge Company bid \$535,000 with time limit of 330 days.

Calif., San Bernardino—Edgar T. Wheeler Company, Los Angeles Railway Bldg., Los Angeles, submitted low bid to county supervisors at \$8,200 for constructing a steel plate girder bridge with concrete abutments over Warm Creek.

Ida., Boise—The state bureau of highways has awarded the contract for the construction of a steel bridge over the Clearwater river at Spalking, about 12 miles from Lewiston, to the Security Bridge Co. The low bid for the three bridges known as Fed. Aid Proj. No. 55 B was given by the Beason Construction Co. D. F. Murphey, contractor, was the low bidder for the construction of 2½ miles of the North and South highway at Whitebird.

Ore., Portland—Bids will soon be called for by the Multnomah County commissioners for emergency repairs to the Morrison bridge across the Willamette River. Estimates place the cost of repairs at \$50,000.

Ore., Portland—A bridge to replace the Ford Street bridge on the Portland Heights car line is to be built, at an estimated cost of \$130,000. It will be open to pedestrians and vehicular travel and will carry two street car tracks. One-fourth of the cost will be paid by the Portland Railway Light & Power Co.

Ore., Portland—A proposed sixth bridge across the Willamette River, costing approximately \$1,600,000, will be decided by the voters at the November election. The new bridge would be located above the Hawthorne bridge which is now the farthest upstream and would involve the widening of the approaches for several blocks at an estimated figure of \$271,000 additional.

Ore., Astoria—As the result of an agreement reached at a conference in Portland between members of the state highway commission, the Clatsop county court and the Astoria Chamber of Commerce, a new and modern bridge will be built next year across the Lewis and Clark

River to replace the present bridge, which has so deteriorated that the highway commission has decided to condemn it. The proposed new bridge will cost, it is estimated, \$150,000, and under the agreement reached, the state will pay half and the county half.

Utah, Ogden—The Beeson Construction Company of Ogden has been awarded the contract for the construction of bridges on the White Bird and New Meadows projects in Idaho. The three bridges will cost \$25,000.

Wash., Seattle—According to present plans by King County only three bridges will be built in the county during the coming year, aside from repair and maintenance work costing approximately \$100,000. The three bridges planned are a new 200-ft. steel span to cross the Snoqualmie on the Falls City-Duval Road, to cost \$25,000; a new 170-ft. steel bridge to be known as Carr bridge, costing \$20,000; a 150-ft. steel span across Green River, near Auburn, costing \$10,000. The proposed \$80,000 bridge planned to span the Stuck River will probably not be undertaken until 1924.

Buildings (Industrial)

Ariz., Tucson—The Arizona Ice & Cold Storage Company has called for bids for the erection of a \$125,000 ice and cold storage plant. Word has been given to the Tucson Builders' Exchange that bids are desired on both brick and concrete construction, the type not having been decided. About \$175,000 will be expended for equipment. Further information may be obtained from the Tucson Builders' Exchange.

Ariz., Phoenix—Southwestern Portland Cement Company plans to erect a cement plant near Phoenix, to cost about \$1,250,000, according to announcement made by O. J. Binford, secy. and gen. mgr. of the company, following a conference with the Chamber of Commerce. It will have sufficient capacity to care for the Arizona field and will employ between 125 and 200 men.

Calif., Los Angeles—Associated Builders Company, 818 Chapman Bldg., has the contract to erect a 1-story warehouse on Santa Fe Ave. near Bay St., for Albert Shorten and Wm. C. Curtiss. Brick construction, 40 x 140 ft., pressed brick, plate glass, steel beams, composition roofing, metal skylights, cement floor; \$10,000. Plans by L. A. Smith.

Calif., Los Angeles—Macdonald & Driver, Douglas Bldg., were lowest regular bidders and will be awarded the general contract at about \$53,000 for erecting a 2-story, class A warehouse at Mill and Industrial Sts., for the Poultry Producers of Southern California. Albert C. Martin, 430 Higgins Bldg., architect. Reinforced concrete and brick construction, 100 x 150 ft., steel sash, steel rolling doors, comp. roofing, metal skylights. Baker Iron Works was awarded the contract for elevators. Total cost, \$60,000.

Calif., Orange—California Wire Company proposes to build a \$100,000 factory at Orange, the mill to be known as the California Cordage Company, and will supply cotton for the wire of the former company, which will contract for entire output. Fred H. Alden, sales manager of both firms.

Calif., Los Angeles—Macdonald & Driver, Douglas Building, have been awarded the general contract at \$24,610 for erecting a 2-story, class C factory building on Wall St. for Mrs. J. F. McElhenney; Albert C. Martin, 430 Higgins Building, architect. The elevator contract was awarded to Llewellyn Iron Works at \$1,600 and sprinkling system to the Grinnell Company at \$1,600. Brick walls, 50 x 135 ft., struc, steel,

comp. roofing, metal skylights, steel sash, cement and factory maple floors, gas radiators.

Calif., Los Angeles—Architect Albert C. Martin, 430 Higgins Building, is preparing plans for an 8-story and basement, class A warehouse at San Pedro and Commercial Sts., for L. A. Warehouse Company. The building will be the first of several similar units; offices in first story, one floor for automobile storage, sales offices on 8th floor, remainder for general storage; reinforced concrete construction, 130 x 150 ft., steel sash, metal skylights, steel rolling doors, passenger and freight elevators, gas radiators, track service; \$200,000.

Calif., Santa Paula—Architects Allison & Allison, 1405 Hibernian Bldg., have been commissioned to prepare plans for a packing house to be erected at Santa Paula for the Santa Paula Citrus Fruit Association as an extension of its present building. Dimensions, 150 x 350 ft., 1-story and basement; reinforced concrete columns and beams, hollow tile filler walls, stucco exterior, comp. saw-tooth roofing, wood floor, concrete basement; \$200,000.

Calif., Los Angeles—The Moran Company, 206 Kerckhoff Building, is preparing plans and will erect a 1-story, factory building at the southwest corner of 18th and San Pedro Sts., for H. J. Kemp. Steel frame construction, brick walls, 40 x 80 ft., cement floor, comp. roofing, steel sash, metal skylights, wire glass; \$10,000.

Calif., Pomona—Western Stove Company of Oakland proposes to build a factory in Pomona, provided local support can be assured. Estimated cost of proposed factory, \$75,000. J. J. Vaughn representing the company, and J. H. Paige, secy. of the local Chamber of Commerce, are in consultation.

Calif., Calexico—Imperial Ice & Development Company has broken ground for an \$80,000 addition to the company's plant. The new building will provide storage for 2,000 tons of ice. E. E. Anderson, asst. to supt., is in charge of the work.

Calif., Fresno—Hugh Sparkman, who has the contract to erect the new L. M. Barker furniture store, has started excavating. The furniture company which will occupy the store is a branch of the well known Los Angeles Barker Bros. They have signed a 20-year lease, which was negotiated by C. H. Antrim and G. A. Manheim. The structure will be of concrete construction, 3-story, 100 x 62½ ft. in height, and cost \$100,000. It will be equipped with sprinkler system. L. M. Barker is president of the company, Clarence G. Bell, vice-president, and Wilbur W. Smith, treasurer.

Calif., Los Angeles—Architect W. J. Saunders, 227 Laughlin Building, is preparing plans for a 4-story, class A factory building at 28th and Main Sts., for Normandin Bros. Co. Reinforced concrete construction, plastered exterior, 56 x 144 ft., steel sash, metal skylights, ornamental iron, freight elevator, etc.

Calif., Los Angeles—G. G. Stuart, 818 Myrtle St., Inglewood, has the contract for erecting a 1-story brick factory building on So. Park Ave., near Santa Barbara Ave., for Kay Bee Mfg. Co. Brick walls, 100 x 126 ft., comp. roofing, metal skylights, cement floor; \$12,000.

Calif., Los Angeles—Architects Jeffery and Schaefer, 1104 Kerckhoff Bldg., are preparing plans for a 2-story warehouse on E. 14th St., for Imperial Warehouse Company. Brick and galvanized iron walls, 100 x 100 ft., comp. roofing, metal skylights, steel sash, concrete and factory maple floors, sprinkler system, wire glass.

Calif., Glendora—Architect Albert C. Martin, 430 Higgins Bldg., is taking bids for erecting a 1-story and basement packing house at Glendora for Hall & Riser Fruit Company. The excavating and foundation are being done by the day. Brick walls, 60 x 140 ft., steel sash, comp. roofing, metal skylights, wood floor.

Calif., Los Angeles—Architect and Engineers Truesdell, Purinton & Newton, 304 San Fernando Bldg., are preparing for two corr. iron shop buildings, at 1671 So. Alameda St., for W. T. Newton. Steel frame, 30 x 40 ft. and corr. walls and roofing, 20 x 30 ft., wood sash, cement floors.

Calif., Los Angeles—Architects Hudson & Munsell, 444 Douglas Bldg., have completed plans and are taking general bids for a 2-story, factory and warehouse building at Ave. 22 and Barranca St., for W. P. Fuller Paint Company. Brick construction, 120 x 125 ft., pressed brick, plate glass, steel beams, comp. roofing, metal skylights, steel sash, wire glass, elevator, cement and wood floors; \$40,000.

Calif., Los Angeles—A. Godfrey Bailey, 410 Jr. Orpheum Building, has prepared plans for a factory building on Santa Fe property on E. 1st St., for Amalgamated Talc Co. Dimensions, 40 x 160 ft., frame construction, corr. iron exterior and roofing, steel sash, cement floors, cleaning tower, milling machinery, storage bins.

Calif., Los Angeles—Stanton, Reed & Hibbard, 623 Metropolitan Building, have completed plans and are taking bids from a selected list of contractors for erecting an 8-story and basement, class A steel frame loft building on east side of Hill St. near 7th St., for Starr Piano Company. All work except structural steel will be included in one contract.

Calif., Los Angeles—The Austin Company, 702 Pacific Electric Bldg., has the contract to erect a brick factory building on Utah St. between 4th and 7th Sts., for Central Industrial & Warehouse Company, Loew's State Building. This will be the first unit of eight similar bldgs. Brick walls, 100 x 117 ft., comp. roofing, metal skylights, steel sash; \$19,000.

Calif., Los Angeles—V. P. Gilbert, 431 Citizens National Bank Building, has the contract at \$12,500 to erect a brick factory building at 2442-44 Hunter St., for F. A. Brown and Fred A. Johnson. One-story, 80 x 140 ft., comp. roofing, cement floors, plate glass, metal doors.

Calif., San Bernardino—Southern Terminal Warehouse & Storage Company has been organized with a capital of \$250,000 and will build the first unit of a number of warehouses, a concrete building, 100 x 200 ft., 2-story, at Rialto Ave. and D St. The company will conduct a general commercial storage business, also trucking and brokerage. Spurs from Union Pacific, Southern Pacific, and Santa Fe lines have been laid. Officers are: Kenneth Matot, Los Angeles, president; Herbert C. Shaw, Los Angeles, secretary; D. R. Bailey, L. E. Bailey, and W. B. Moorhead, all of Los Angeles, directors.

Calif., Ontario—National Phonograph and Motor Company will start work in 60 days on a factory for production of phonograph motors. The keely motor is manufactured by this company which sells them to manufacturers of phonographs. T. W. Anderson and W. L. Burt are in Ontario.

Calif., Fresno—People's Ice Company has started construction of a \$100,000 addition to its plant at Woodward St. and Anna Ave., near Broadway. Building will be 151 x 101 ft., with inside height of 51 ft. The addition will add 18,000-ton capacity.

Calif., Orange—Gay Engr. Corp., 2650 S. Santa Fe Ave., Los Angeles, is preparing plans and specifications for an ice and cold storage plant to be erected on a 3-acre tract on West Walnut St., opposite the Standard Oil Plant, for the Orange Ice and Cold Storage Company. Estimated cost of storage plant, \$50,000; building, \$40,000.

Calif., Blythe—H. L. Christian Lumber Company has contract to erect shipping sheds, 25 x 130 ft., for the Palo Verde Creamery Co. H. J. Boyle, proprietor, also announces that he will build a second building on his 75-ft. Main St.

frontage to be occupied by a modern refrigeration plant.

Calif., Redondo Beach—Mission Laundry Corp. has been granted permission by city trustees to erect a laundry plant on Pacific Ave. at Broadway. It is proposed to have the plant electrically operated.

Calif., Los Angeles—Austin Company, 702 Pacific Elec. Bldg., has the contract to erect a 1-story factory building, 166 x 220 ft., on 16th St. near Vermont Ave., for A. C. Blumenthal & Co., Loew State Bldg. The building is being erected for and will be sold to Gilfillan Bros. It will have steel frame and roof trusses, brick walls, steel sash, comp. roofing, saw tooth roof, cement floors; \$60,000.

Calif., Pomona—Architects Walker & Eisen, 325 Pacific Finance Building, are taking bids for a warehouse to be erected at Pomona for Southern Counties Gas Company. One-story, 25 x 150 ft. with a wing 40 x 60 ft., brick construction, comp. roofing, cement floor, yard paving, etc.

Calif., Madera—A contract for building a two-band sawmill for the Madera Sugar Pine Company has been obtained by F. W. Horstkotte, designer and builder of Spokane. The new plant will replace one destroyed by fire. In addition to the sawmill, the plans call for a new power plant, tramway and flumes. Completion of the mill by spring is proposed.

Colo., Denver—To provide for the needs of its expanding business, the R. Hardesty Manufacturing Company will build a new plant at 30th and Blake streets, financing of which has been completed in the sale of \$250,000 of unissued preferred stock to a syndicate of local brokers. Authorities declare that the company is the world's largest manufacturer of irrigation supplies such as flumes, headgates, lifts, etc., including equipment for hydro-power projects.

Mont., Neilhart—Contracts have been let for the immediate construction of a concentrating mill for the American Zinc and Lead Company, according to Thomas B. Stearns of the Stearns-Roger Manufacturing Company of Denver, which is interested in the project.

Mont., Glendive—A new store and warehouse to cost about \$80,000 is to be erected by the Northern Pacific Railway Company at its division point in the city of Glendive.

Ore., Bend—Construction of a new sawmill will be begun by the Brooks-Scanlon Lumber Company as soon as details can be worked out. The new mill will be located about a quarter of a mile upstream from the present mill, and will be a duplicate of the present mill, only larger. New machinery will be installed which will be supplied by the Diamond Iron Works of Minneapolis. Whether the new mill will be driven by steam or electricity is yet to be decided, but in either case a complete boiler installation will be necessary. Four new planers will be added, also another locomotive will be needed, in addition to more cars and five miles of logging spurs.

Ore., Portland—A new planing mill with dry kiln, sorting and stacking machines is planned by the Clark Wilson Lumber Company of this city. All machines will be motor driven and should be ready to operate the first of January, 1923.

Ore., Portland—A contract amounting to \$111,976 was recently signed between the Commission of Public Docks and the contracting firm of Quinn & Burton, whereby the latter agrees to erect a storage space at terminal No. 4, St. Johns, for the storing of apples and other perishables. As the foundations are already in place it will be possible for the warehouse contractor to proceed at once with his operations. The work should be completed by the end of November. The walls are to be of hollow tile

with special attention given to the ventilating system.

Ore., Portland—A new lumber mill of 250,000-ft. capacity daily, is to be constructed adjacent to the Nehalem Boom Company site on the Willamette slough near Linnton. Dry kilns and planing mills will be included, and will furnish employment for 500 to 700 men. W. D. Skinner, vice-president and traffic manager of the S. P. & S., made the announcement late in September.

Ore., Eugene—The erection of a new sawmill in the Lost Creek district above Dexter, is announced with the completion of negotiations of the Oregon Western Lumber Company for a tract of twenty-five million feet of standing timber in that district. The mill will have a daily capacity of 25,000 ft.

Utah, Ogden—Excavation work has been started for the construction by the Ogden-Utah Knitting Company of its new plant, which is to be a reinforced concrete structure to cost \$50,000. The new structure will give the company a floor space of more than 28,000 sq. ft., the buildings consisting of two stories and basement. The plant is to be equipped with additional modern knitting machinery.

Wash., Chelan—R. R. Moorhead, Spokane, has received a contract from the Great Northern Railroad for a \$450,000 ice manufacturing plant to be built here. Plant will have a capacity of 400 carloads, and will be completed by Jan. 1.

Wash., Concrete—The Superior-Portland Cement Company has awarded a contract for a clinker storage building to the Rounds-Clist Company, Seattle, for \$97,000. The building will be 250 x 125 ft., 60 ft. high, of steel and concrete construction, and when completed with equipment will cost \$130,000.

Wash., Toppenish—The Toppenish Elevator Company will immediately install equipment for a starch factory, to handle the cull potato crop of the district. About 50 tons a day will be the capacity of the plant under W. C. Gifford, manager.

Wash., Eatonville—The owners of the Williamson mill of the Elbe Lumber & Shingle Company have announced that the mill which suffered a fire loss of \$150,000 on the night of Sept. 29 will be rebuilt.

Wash., Seattle—The Seattle Box Company plans a new addition, 60 x 80 ft., three stories high, to its plant, to cost approximately \$15,000 exclusive of equipment.

Wash., Bellingham—The building of an immense dairy plant to cost \$150,000 and to handle all branches of the Dairymen's Association business is being considered. Whatcom County is growing into one of the largest dairying counties in the Northwest.

Wash., Seattle—The Washington Auto Body & Wheel Company plans the enlargement of its plant by erection of a large addition and installation of new equipment. Lewis Williams, owner.

Wash., Centralia—The plant of the H. H. Martin Lumber Company, recently destroyed by fire, will be rebuilt, at a cost of \$75,000.

Wash., Yakima—The Northern Pacific Railroad has purchased a \$50,000 site in Yakima, which will be used for industrial development.

Dams

Calif., Los Angeles—Chief Engineer Mulholland of the Los Angeles Bureau of Water Works and Supply announces that construction work has started at Fairmont reservoir to increase the height of the earth dam from 81 to 96 ft. This will increase the storage capacity from 5,900 acre-ft. to 7,600 acre-ft.; the estimated cost is \$100,000. The height of the earth dams at Stone Canyon reservoir near Beverly Hills and of the Encino reservoir in the upper San Fernando Valley will also be increased. Enlargement of the storage capacities of these reservoirs

is being made as a precaution against a recurrence of breaks in the aqueduct, and will assure the city of a constant supply of water for several months should such breaks occur.

Calif., Anaheim—Prendergast Construction Co., 1321 Washington Bldg., Los Angeles, was awarded contract at \$15,950 for construction of Pratt Dam No. 2 at canal intake, Santa Ana River, for Anaheim Union Water Company. Company will furnish materials. Dam will be L-shaped, one section 216 ft. long and the other 136 ft.; 6 x 6-in. wire mesh will be welded on 60-lb. steel rails 30 ft. long used for piles. There will also be lumber and riprap work. Other bids were: Robinson-Roberts Co., \$19,470; R. H. Travers, \$18,980.

Calif., San Diego—The city council of San Diego has instructed the city purchasing agent to turn over to H. N. Savage, hydraulic engineer of the city, equipment from the Barrett dam project to be used in enlarging the spillway of Morena dam. Cost of the work is estimated at about \$90,000 and it will be met with funds from the revenues of the city water department. The dam will be raised 10 ft. with materials excavated to enlarge the spillway. Additional water which the dam will impound will be worth several times the cost of the work.

Calif., San Diego—Col. Ed. Fletcher has been granted a permit to build the Sutherland reservoir on the Santa Ysabel River for the development of hydroelectric power. The dam, which will develop 3,000 theoretical horsepower, will include 4.9 mi. main line or canal, of 20-in. pipe. Col. Fletcher recently purchased 880 acres of the Chambers ranch for a syndicate composed of wealthy Californians, who plan to develop the section for colonists.

Highways

Ariz., Phoenix—S. B. Shumway has been awarded contract at \$66,686.71 for construction of 15 miles federal standard road between Gila Bend and Piedra. State furnishes cem., reinforced steel for bridge structures, and corr. iron pipe.

Ariz., Tombstone—State Engineer Thos. Mad-dock has authorized contractors White & Miller to proceed with paving of 5-mile extension of Bisbee road. The supervisors had declined to proceed with work owing to protests from several property owners. Telegraphic requests from business men caused the state engineer to order work from funds under his control.

Calif., Los Angeles—A survey of Cahuenga Pass to determine an estimate of cost for reducing the grade of this link in one of the most important thoroughfares connecting the San Fernando Valley and the coast route of the state highway with Hollywood and the western section of Los Angeles, is under way by the county road department on order of the Board of Supervisors. Traffic is heavy through the pass and the 10 per cent grade is credited as being the cause of many accidents. It is proposed to lower the grade to 6 per cent from the junction of Highland Ave. and Cahuenga Blvd. in Hollywood north to Universal City, bringing it down to a level with the Pacific Electric tracks. The cost of improvement is regarded as prohibitive if assessed against the affected property owners and the county is being urged to carry the burden.

Calif., Los Angeles—Three steam shovels are at work on the mountain road between Fredalba on the Crest road, and Big Bear Valley dam, a distance of 13 miles, known as the Deep Creek cut-off. This road will eliminate the steep mountain climb into Big Bear Valley. Utah Construction Company is building the road under supervision of the U. S. Bureau of Public Roads, its contract amounting to \$370,000. Work will be carried forward as long as weather permits and will be resumed next spring. It is expected the road will be completed by next fall.

Calif., Oceanside—County supervisors are considering ways and means to pave about 2,200 ft. of country highway, between city limits of Oceanside and the completed San Luis Rey valley pavement. George Butler, county surveyor.

Calif., Long Beach—H. H. Peterson, Loma Portal, Calif., was awarded contract at \$227,394.40 for paving 7.77 miles state highway in Los Angeles and Orange counties, between Long Beach and Huntington Beach, with 6-in. cem. concrete.

Colo., Denver—The state highway department has just approved bids on a number of grading and paving projects, the most important of which is the connecting link of 1.5 miles of concrete on the north highway out of this city. Two grade crossings will be eliminated, and the work will connect the paving which has already been completed. The lowest bid was \$56,884.56. Other projects on which work will be started shortly and the lowest bids submitted are as follows: Grading and draining ten and three-quarter miles of road from a point two miles north of Platteville to LaSalle, \$32,997.35. Concrete pavement from the Aurora city limits east on the Union Pacific highway, one mile, \$31,024.90. Gravel surfacing of five and one quarter miles west of Durango, \$91,139.70. Gravel surfacing of three and one-half miles west of Durango, \$62,213.55. Grading and draining seven and one-half miles between Saguache and Cochetopa pass on the Saguache-Gunnison road, \$44,654.

Idaho, Lewiston—A contract for grading and surfacing the hill highway from Kamiah to Nez Perce was let to the Triangle Construction Company of Spokane for the sum of \$68,500. This sum is exclusive of the cost of engineering and culvert pipes. The contractors are expected to be on the ground at once and work will continue most of the winter.

Mont., Missoula—A contract for building 4.83 miles of road on the Wolf Lodge-Squaw Bay project has been awarded to H. H. Boomer of Spokane, Wash., by the Forest Service. This bid was the lowest of the fourteen bids submitted. The 1,400-ft. trestle contract for the Squaw Bay crossing was awarded to A. B. Lef-ferty of Coeur d'Alene, Idaho, on a bid of \$22,862.50.

Ore., Corvallis—The state highway commission has let a contract for the grading of six miles of the Alsea mountain road, at a cost of \$204,000. This contract is for grading alone, not rocking. The mountain is to be cut so that no grade will be more than 5 per cent. It will take all winter to finish the grading. Next summer the road probably will be used without rocking, which will cost between \$5,000 and \$6,000 a mile and will be undertaken as soon as money is available for that purpose.

Wash., Walla Walla—Root & Joslyn, Spokane, on a bid of \$40,000, received the contract for building 5½ miles of gravel road in the Gardena district. Work involves 24,942 cu. yd. of common excavation, and 9,099 cu. yd. of crushed rock surfacing.

Wash., Seattle—King County Engineer Thos. R. Beeman has completed plans for filling, grading and graveling two miles of the East Valley Road, from Auburn south to the Pierce County line, and bids will be called within 30 days. Work involves 37,812 cu. yd. of borrow excavation, 7,888 cu. yd. of gravel, and about 500 ft. of concrete pipe 12 in. to 30 in. in size.

Irrigation Projects

Ariz., Maricopa—Bids are being received by the directors of Maricopa irrigation district for construction of an irrigation system, according to plans and specifications on file with the secretary of the district. The work will include drilling of 17 wells, and 36 batteries of 3 wells each, construction of necessary shafts, pumping

chambers and connection tunnels, derrick towers, pumps, motors, 51 miles of 11,000-volt transmission line, 60-pole type transformer stations complete, lightning arresters, switches, etc., and the excavation of approximately 74 miles of distributing ditches. Certified check or deposit of 10 per cent. D. H. Smith, secy.

Calif., Paradise—The Pacific Pipe and Tank Company of San Francisco was awarded contract for the construction of a pipe line for the Paradise Irrigation District on a bid of \$54,457.70. The line will replace 13,160 ft. of open ditch.

Calif., Palmdale—H. G. Klusman, Cucamonga, has the contract to make and lay about 30 miles of irrigation pipe for the Palmdale and Little Rock irrigation districts.

Calif., San Francisco—King's River water storage district has filed an application with state dept. of public works for formation of project to irrigate 1,000,000 acres; estimate, \$30,000,000. A dam will be constructed at Pine Flat, and a power plant will be erected to furnish 90,000 kw. to the pumping plants. A board of engineers composed of J. B. Lippincott, Los Angeles, A. D. Schindler, San Francisco, and W. H. Shafer, Fresno, has been investigating the project.

Mont., Hamilton—The Bitter Root irrigation district system is about to let the first contract for 11,000 ft. of flume. Powell & Jacobs of Seattle, Wash., will design and supervise the construction of the project.

Ore., St. Helens—The county court has approved the petition of the owners of the lowland property near Scappoose for the formation of a drainage district. Fifty-three hundred acres of rich bottom land along the Columbia River will be diked and converted into farm lands.

Ore., Medford—William Von der Hellen of Eagle Point, was awarded the contract for the construction of the Eagle Point irrigation district canal between Big Butte Creek and Eagle Point. His bid was for the sum of \$140,300.

Wash., Wenatchee—Two bids received, each approximately \$53,000, for the construction of the Wolf Creek irrigation project on the Methew River in Okanogan County, were both rejected and work will be done by day labor under supervision of Dan A. Scott, director of conservation and development. Director Scott expects to save \$10,000 under the day plan. The Wolf Creek district is a project of 1,000 acres, bonded for \$70,000.

Wash., Wenatchee—Improvement work costing \$85,000 will be performed in the Wenatchee irrigation district during the winter, commencing about the middle of October. The work includes the replacing of 2,000 ft. of sidehill flume by a concrete ditch, concreting about one-third of the new 3,300-ft. tunnel, and completing the tunnel for the diversion of water next summer; concreting 2,000 ft. of the main canal between Sunnyslope and Cashmere, one-half mile of the Sunnyslope lateral, and one-half mile of the ditch in East Wenatchee. Work also includes the renewal of 1,600 ft. of 42-in and 48-in. pipe on the Columbia River Bridge, about 1,000 ft. of the new pipe to be steel. C. C. Williams, Wenatchee, is district engineer on the project.

Wash., Prosser—Immediate development of the Horse Heaven project of 225,000 acres, to which water was to be brought by means of a \$32,000,000 bond issue voted by the landowners and recently validated by the courts, has been halted by the failure of Howard Amon, contractor of Portland, to file his \$6,000,000 surety bond at Prosser within the time specified. Amon has asked for a 30-day extension, but the directors have taken no action, leaving them open to accept Amon's bond if filed before Nov. 18, or to enter negotiations with any other reputable contractor who offers to handle the job. Amon was to take charge of construction work and also of the marketing of the bonds, and it had been reported that all financial arrangements had been completed.

Wash., Spokane—The new Spokane Valley irrigation district has been voted upon with favor. The new district will comprise 5,000 acres.

Wash., Seattle—King County will spend \$50,000 during 1923 for the improvement of the Green River channel, in an effort to protect the valley lands from the ravages of yearly floods. County Commissioners have approved the appropriation of this sum for the work, the major portion of which will be spent between Kent and Renton.

Wash., Yakima—The Tieton Water Users' Association is considering plans for a high line canal to water 3,000 acres of now arid land above the present Tieton canal. If the plan is approved, tentative financing plans have been developed. The project would cost about \$1,000,000, and it is estimated the land will cost \$400 an acre.

Wash., Olympia—Dan A. Scott, director of the department of conservation and development, announces his approval of the proposed Carstairs Prairie irrigation project, as feasible and suitable for economic development. The project includes from 600 to 1,000 acres of good gravelly soil, which has been given a soil survey at the State College of Washington. According to a report from the reclamation division, 600 acres of the land can be developed for \$30 an acre, while 1,000 acres would cost at the rate of \$20 per acre.

Wash., Newport—It is announced that the Upper Columbia Land Company, large owners near Northport, plans the installation of a \$350,000 dam at Onion Creek for irrigation. Joseph Reed is manager of the firm.

Wash., Aberdeen—Parker-Schram & Company, Portland, received the contract by the Grays Harbor County Commissioners for the new drainage district in South Aberdeen, on their bid of \$78,000. Contract calls for dyking of 4 miles of the territory, 30 miles of ditching and 10 miles of streets. The street work includes dyking, drainage, and crowning ready for the gravel.

Power Plant Equipment

Wash., Everett—The Puget Sound International Railway & Power Company, here, has purchased the power plant holdings of the Granite Falls Electric Company of Granite Falls, for a consideration of \$16,000. The new owners plan to make extensive improvements, and will eventually connect the Granite Falls system with the high power lines of the company, greatly improving and stabilizing electric power service in the Granite Falls district. The Puget Sound lines now reach Hartford.

Wash., Chehalis—The Lewis River Light & Power Company has sold its electric system, which supplies the town of Woodland in southern Cowlitz County, to the North Coast Power Company. Understood new owner plans extensive improvements to the system.

Power Projects

Calif., San Bernardino—Lynch Cannon Construction Company, Chapman Building, has been awarded a contract for erecting a power house at San Bernardino for the Santa Fe Ry. Co. Struc. steel frame and roofing trusses, 81 x 103 ft., 50 ft. high, reinforced concrete roofing, steel sash, reinforced concrete floor; \$80,000.

Calif., San Pedro—City bureau of power and light is preparing plans for a class A, reinforced concrete substation building to be erected at Regan St. and Harbor Blvd. It will have 2 stories, 110 x 45 ft., steel frame and concrete on piles set 13 ft. below grade. The equipment will include one 5,000-kva. condenser, with another to be installed later, and one 20-ton traveling crane. Architect Frederick H. Roehrig, Pasadena, is assisting with the design.

Calif., Banning—San Geronio Power Company has let contracts for the construction of

two power plants along the diverted Whitewater River, north of Banning. Work will start at once. One plant will be located at Big Oaks and the other at Camp Comfort. Estimated cost, \$500,000. Later a third will be erected to cost \$400,000. Among the firms securing contracts are Westinghouse Elec. & Mfg. Co., Pelton-Doble Company, and Llewellyn Iron Works. The company has made a contract with Southern Sierras Power Company to purchase the developed electric power.

Neav., Virginia City—The Truckee River General Electric Co. is making preparations for the construction of a new power line in the Sixmile canyon section to the Berry group of the Nevada Mining Corporation holdings and the old Rowe mill in the canyon. This mill will be equipped with modern machinery.

Ore., Reedsport—The city council of Reedsport granted a franchise to F. J. Shorey of Portland to furnish light and power to the city. The franchise covers a period of 35 years. The plant will be in operation within six months. The city has been without light for the last year owing to the old company going bankrupt.

Wash., Friday Harbor—Two franchises for electric transmission and distribution lines, to be constructed along the rights-of-way of state highways, were granted to the Lakeview Power & Light Company and to the Pacific Power & Light Company.

Wash., Mount Vernon—The Delta Electric & Water Company has begun construction of the first 3,400-hp. unit of the company's hydroelectric plant, 15 miles southwest of Mount Vernon, and delivery of current to Anacortes and vicinity is promised by Frank MacKean, president of the company. The first unit will supply power and light to Anacortes and Fidalgo Island, also to meet requirements of farmers in the vicinity of Mount Vernon, Conway, Avon and other localities adjacent. The company will ultimately extend its plant by diverting the waters of Bear Creek into Lake Cavanaugh, and construct another power plant two miles southeast of Big Lake, until a generating capacity of 40,000 hp. is reached, serving customers from Everett to Bellingham. Delivery of electric current to Anacortes and to the farm homes is promised by March 1.

Wash., South Bend—The Nettleton Power Company has applied for a permit to appropriate the waters of Nasel River in Pacific County for the development of light and power to supply the towns of Ilwaco, South Bend, Chinook and adjoining territories. Plans provide for developing 10,000 hp., and the construction of a dam 125 ft. long and 50 ft. in height, the entire project to cost \$250,000.

Railways

Calif., San Diego—San Diego Elec. Ry. plans to expend about \$1,000,000 this year in construction work, including entire new roadbed, rails and paving on Market St., between 6th and 16th Sts., the reconstruction of the 16th St. line between Logan and National Aves., and reconstruction of the University Ave. and Adams Ave. lines.

Calif., Pomona—Pacific Electric Railway Co. will extend line between San Dimas and Glendora. This 5-mile extension will cost about \$370,000. D. W. Pontius, general manager, Los Angeles; W. E. Foote, in charge of Pomona-Glendora district.

Calif., San Bernardino—Ordinance No. 907, passed by city council, granted Pacific Electric Railway Co. permit for erection of spur railway track at Rialto and F Sts.

Calif., Lompoc—Work will start soon on the new short line railway to be built from Lompoc to the White Hills, for which articles of incorporation were filed recently. The name of the railway is Pacific-Southwest Railway, and it is backed by the directors of the Celite Company.

The corporation its capitalized at \$100,000 and proposes to carry both freight and passengers.

Calif., Santa Barbara—It is reported that S. P. Railway is preparing to build a standard gage railway through Santa Ynez valley, touching Gaviota, Solvang, Santa Ynez and Los Olivos. The total length is 25 miles. They are reported as securing right-of-way.

Colo., Denver—Extension of the street railway system to serve the new Burlington railroad shops is planned by the Denver Tramway Co. Residence sites in the vicinity of the shops have already been placed on sale and it is generally believed that a large area will be built up in the vicinity of Utah Junction, thus requiring passenger transportation facilities. The cost is estimated at \$30,000.

Ore., Portland—An ambitious rail, barge and steamship project, tying the rich Yakima region directly to Portland and involving the expenditure of \$7,500,000 for the construction of 154 miles of railway, was announced by E. E. Lytle, prime mover in the project. The announcement followed the filing of articles of incorporation of the Yakima Railway Company at Olympia, Wash. Cost of the Yakima road as proposed would be approximately \$5,000,000, according to Mr. Lytle. Additional lines projected are an extension from Yakima to Beverly, Wash., 38 miles, where a connection will be effected with the Milwaukee road, and another 35 miles between Ellensburg, on the main line of the Milwaukee and Northern Pacific, to Wenatchee.

Wash., Vancouver—With a capital stock of \$1,000,000, the Yakima Southern Railway Co. will maintain a line in the state of Washington from a point on the Columbia River near Underwood northerly to the town of Yakima, and will provide freight, express and passenger service at convenient points.

Wash., Kelso—Surveying for the route for the Cowlitz Lumber Company's new logging railway, from the bank of the Cowlitz River on the George Smith place into the company's timber holdings, is under way. The company will build about 2½ miles of railways and rollways and will have the line ready for operation early next summer. This line will tap about 60,000,000 ft. of timber and a later extension of a mile or more will reach 40,000,000 ft. more. The logs will be floated to Kelso for rafting.

Ore., Portland—Bids to cover the construction of the extension to the Bull Run water system in Penrose, are called for. Ten miles of various sizes of pipe will be used. The total cost of the work is estimated at \$48,000 by the engineers, Stiger and Lincoln, Railway Exchange Building.

Wash., Everett—City council has passed an ordinance proposing to submit to the voters of Everett at a special election a bond issue of \$350,000 for an additional 20,000-gal. reservoir, and a 24-in. distributing main to supplement the present distributing system.

Wash., Camas—City council has commissioned Stevens & Koon, consulting engineers, to prepare plans for construction of water works improvements for the city, including the construction of a 7-mile pipe line.

Street Lighting

Calif., Los Angeles—Bids are being received by Board of Public Works for ornamental lighting system in the following streets: Broadway between 50 ft. southwest of 10th St. and Pico St.; Sixth St., between Pacific Ave. and Harbor Blvd., San Pedro. Work is to be done under 1911 Lighting Act. H. B. Ferris, secy.

Calif., Eagle Rock—Southern California Edison Company has estimated cost of proposed lighting system for Eagle Rock as \$129,000, cost of current, \$1,376.65 per month. Board of trustees will take up the matter at next meeting.

Calif., Newport Beach—The \$60,000 bond issue for purchase and improvement of old wharf at

Newport carried at recent election in Newport Beach, Improvement Dist. No. 2. Ornamental lights will be installed on the pier.

Calif., Los Angeles—Engineer Scattergood stated that street lights will be installed on 6th, 12th, Broadway and Figueroa Streets.

Calif., Los Angeles—Southern California Electric Company, 625 So. Main St., submitted lowest bid to board of public works and was awarded contract at \$14,996 for furnishing and setting ornamental light posts and appliances on Broadway between 10th and Pico.

Calif., Los Angeles—H. H. Walker, 1800 W. 12th St., submitted lowest bid to board of public works and was awarded contract at \$11,660 for furnishing and setting ornamental light posts.

Utah, Gunnison—The Telluride Power Company has been awarded the contract for the installation of an ornamental lighting system for Gunnison City. According to present plans there will be twenty lights, ten on the east side and ten on the west side of Main Street, on metal poles fourteen ft. high. Work is to be started within a very short time.

Wash., Wenatchee—Street lights are to be installed in the north, west and south parts of town, according to a recent decision of the council.

Streets and Sewers

Ariz., Chandler—City council desires a report and estimate of cost of installing a complete sewer, water and lighting system. Total cost not to exceed \$150,000. Engineering firms interested are asked to make a personal visit to Chandler as soon as possible. Further information may be obtained by applying to city clerk, Chandler, Ariz. This town now has a population of approximately 1,300.

Calif., Madera—Bids have been called for by city trustees for the construction of the proposed sewage disposal plant. It will be located on the 20-acre tract just outside the southwest city limits.

Calif., Anaheim—Engineers for the combined Santa Ana, Anaheim and Fullerton outfall sewer will have plans completed within a few days, and bids will be called for. Funds for the work are in the hands of the treasurers of the city participating.

Calif., Santa Monica—City council will call for bids soon for construction of sewers in a new sewer district formed between Wilshire Blvd. and Colorado Sts., and 20th and 26th Sts. John A. Morton, city engineer.

Calif., Delano—Stroud Bros., Bakersfield, were awarded contract at about \$119,000 for constructing sewer system and storm sewer for city of Delano, involving 1 reinforced concrete settling tank; 2 sludge beds; 910 ft. concrete cradle; 8 catch basins, 2 flushtanks, 138 manholes, 24 drop manholes, 47 lampholes; 3,978 ft. 24-in., 434 ft. 28-in., 18,227 ft. 15-in., 9,131 ft. 12-in., 9,961 ft. 10-in., and 38,778 ft. 8-in. bell end concrete pipe; 289 15 x 6 in., 160 12 x 6 in., 178 10 x 6 in. and 2,111 8 x 6 in. wyes. California Glazed Cement Pipe Company of Los Angeles will furnish the pipe. John S. Bates, 628 Rowell Bldg., Fresno, engineer. Work to be done under 1911 Improvement Act and 1915 Bond Act.

Calif., Alhambra—Engineering forces will be able to start actual construction of the new sewer system within six weeks. An ordinance of intention will be presented to the commission at its next meeting, and will include the district north of Alhambra Road, west of Garfield St. Plans and surveys for the entire city are under way. The cost will be distributed equitably, every lot, not already connected with trunk line sewer, to be charged its proportion. The work is being done under joint supervision of city commission, City Mgr. Grant Lorraine, and an advisory board.

Calif., Orange—This city will be allowed to join Santa Ana, Anaheim and Fullerton in the construction and maintenance of a joint outfall sewer to the ocean and a joint sewage treatment plant, on a fair basis, as soon as the necessary financial arrangements can be made. A representative of the city of Orange was present at a conference of city officials of Santa Ana, Anaheim and Fullerton when the final agreement between those cities was signed, seeking information as to the terms upon which Orange might be admitted to the pact, and the vote to allow that city to participate was unanimous. By the terms of the agreement all work in connection with the construction of the joint outfall and treatment plant will be handled by the city of Santa Ana.

Calif., Fullerton—City trustees have authorized mayor and city clerk to sign contract with Santa Ana and Anaheim to construct the new tri-city outfall sewer system. The cost will be about \$200,000, to be borne by the cities as follows: treatment plant and site, 33 1/3% by each; outfall sewer line, 60% by Santa Ana, 20% by each of the others. The maintenance cost shall be based upon yearly usage. The city of Santa Ana shall have charge of construction and shall be responsible for all details until system is ready for use. The sewer line to the ocean will be 42-in. dia. pipe and will have a capacity of 1,400 miner's inches. Orange may be taken into the arrangement when that city is financially able. W. G. Knox, city engineer, Santa Ana. Bids will be called for at an early date.

Calif., Los Angeles—City Engineer John A. Griffin has submitted estimates to the board of public works for constructing the first of three units of the new \$12,000,000 sewage disposal system. The estimate of the net total cost of building the treatment plant, incinerator, the one-mile extension of the sewer oceanward, and incidental items is \$1,450,350, made up as follows: \$910,740 for building cast iron pipe line with concrete protection one mile into sea and construction of new and removal of present piers; \$133,400 for excavating site for treatment and screening plant at Hyperion; \$260,000 for screening plant fully equipped; \$70,000 for incinerator and buildings; \$50,000 roads and miscellaneous structures; \$26,210 for connecting conduits for existing outfall sewer. The board of public works has ordered plans and specifications for the first three units.

Calif., Pasadena—Architect Cyril Bennett, 313 Kendall Building, Pasadena, has been commissioned by City Manager Koerner to prepare maps and cost reports on setting back building fronts in street widening proceedings on Green St. and opening it through to Hill St.

Ida., Kellogg—The Miracle Paving Company of Great Falls, Mont., has obtained the contract for paving some side streets for about \$45,000. Approximately 57,000 sq. ft. will be paved, requiring 9,000 ft. of curbing.

Mont., Helena—A paving contract has been awarded to Birch & Sons of Great Falls for the laying of bithulic pavement in district 130. Their bid was \$62,386.40. Work will be started at once.

Wash., Kelso—The engineering staff of the Long-Bell Lumber Company, which is developing the new community near Kelso, is completing plans for a mammoth storm and sanitary sewer to serve the district. The main trunk sewer will be 48 in. in diameter and nearly two miles long, with a large number of small lines radiating from it. The sanitary sewer system will be an entirely separate installation, and will drain to the Columbia. Bids for the work will be called at an early date.

Wash., Seattle—Contract for paving of Orcas Street has been let to Stilwell, Inc., 3220 9th Avenue, on a bid of \$37,721. Work involves 9,675 sq. yd. of concrete paving, 6 in. thick.

Wash., Tacoma—C. E. Torkelson, contractor, on bids of \$29,840 and \$8,350, received the contracts for resurfacing two sections of St. Helens Ave., 6th to Davison Avenue, and 6th to 9th Sts., respectively.

Wash., Seattle—F. W. Lupis, 1909 Charles Street, at \$34,874, was low bidder for the paving of Taylor Avenue.

Wash., Everett—J. W. Hoover & Company, on a bid of \$60,695.13, received the contract for paving Virginia Street, et al.

Wash., Seattle—Contract for paving Alki Ave. has been awarded to R. G. Stevenson, on his bid of \$121,456. The work involves 35,800 ft. of concrete curb.

Wash., Seattle—Contract for paving 20th Avenue N. E., et al., has been let to D. H. Traphagen, Walker Building, on a bid of \$54,560. This contract involves 16,000 ft. of concrete curb, and 16,450 sq. yd. of 6-in. concrete paving.

Wash., Cashmere—City council plans to proceed at once with construction of sewer system to cover entire city.

Wash., Seattle—Contract for paving of Findlay Street, et al., has been let to V. Ramaglia, Seattle, on his bid of \$47,501. Work involves 16,225 sq. yd. of concrete paving, and 4,000 cu. yd. of earthwork.

Waterworks

Calif., Fruitvale—Fruitvale Water Company will ask for permission to increase its capital stock from \$400,000 to \$600,000, for the purpose of securing funds for new development projects.

Calif., Inglewood—Voters have authorized a bond issue of \$57,500 for purchase of water-bearing land and \$157,000 for new water equipment and extension of lines.

Calif., Eagle Rock—A \$48,000 bond issue will be submitted soon to install new 4-in. water mains, 123 hydrants; also \$60,000 for sinking two more wells, constructing a large reservoir on Sagamore Hill, and laying of a 12-in. main in Colorado Blvd., and one in the alley west of Central.

Calif., Santa Barbara—U. S. Cast Iron Pipe & Foundry Company was awarded contract at about \$50,000 for furnishing water pipe to city.

Ida., Twin Falls—Unanimous vote for the issuance of \$12,000 worth of municipal bonds for purchase of a waterworks plant and source of water supply for Hollister, Idaho, has been put through. Artesian wells, about six miles southeast of the town, have been the previous source of water supply.

Ore., The Dalles—The water commission of The Dalles has directed Stephens & Koon, consulting engineers of Portland, Ore., to prepare plans and specifications for improvements to the waterworks system. Preliminary surveys and investigations are under way in order to prepare for a bond election to be held this fall, so that construction may begin early in the spring. The work will consist of storage and distributing reservoirs, a new gravity pipe line and extension and improvement of the distribution system. The probable cost will be between \$250,000 and \$300,000.

Wash., Seattle—The City Water Department has granted a contract for furnishing 1,000,000 lineal ft. of staves for 60-in. wood pipe to the Continental Pipe Manufacturing Company, on the firm's bid of \$75.92 per thousand board ft., or a total contract of \$94,900.

Wash., Omak—The bond election for an issuance of \$13,500 in bonds to enlarge and extend water system of the city, passed recently. Present plant and reservoir will be duplicated and mains extended to new districts.

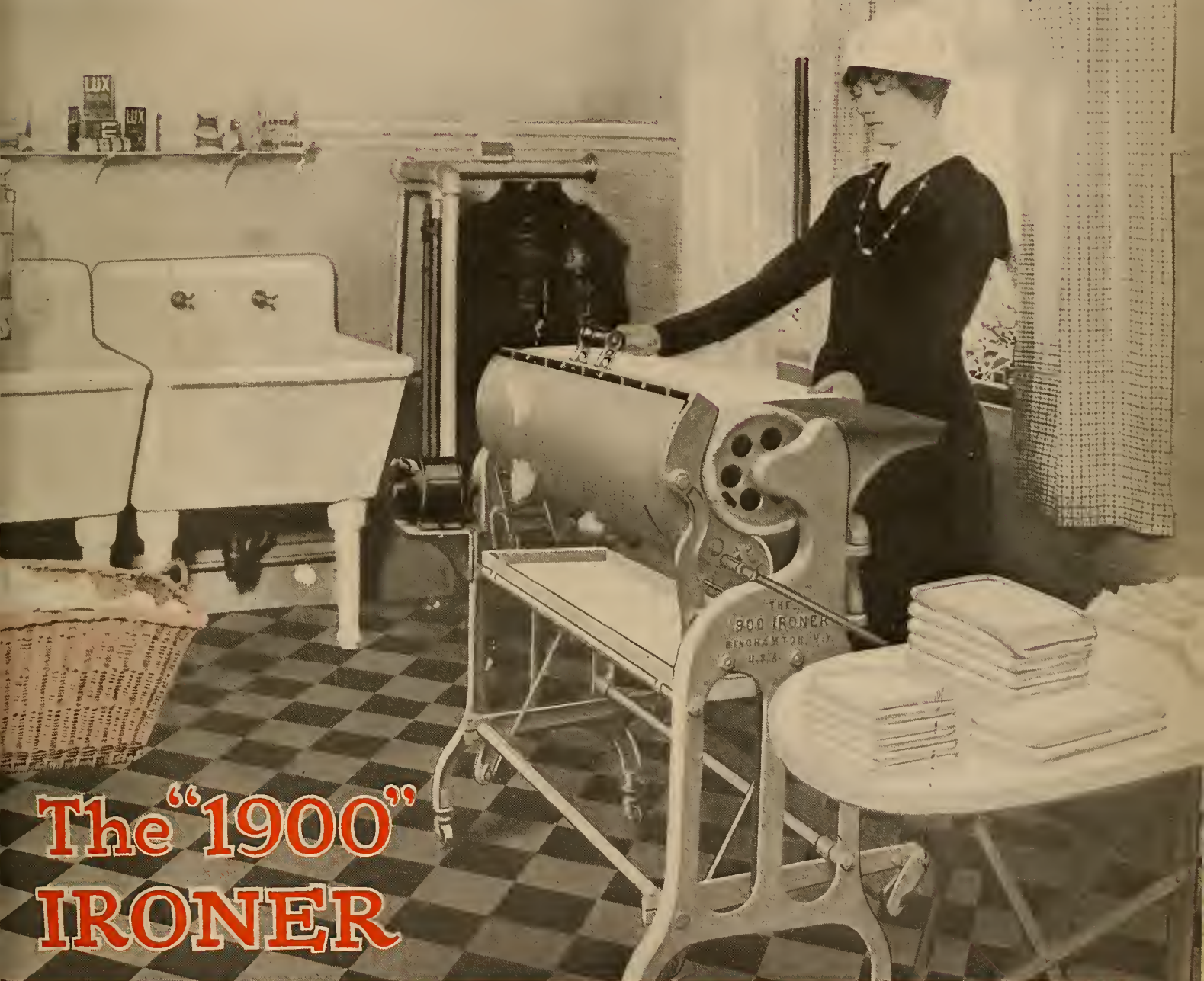
Wash., Spokane—The city council plans improvements to the North Side water systems to cost \$200,000, including the construction of an \$80,000 reservoir.

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The Crawford Plan gives every central station executive a chance to combine his energy with our own to further the use of electricity in the homes of the people. It's a plan to sell the best range in the best way. Have you seen it?

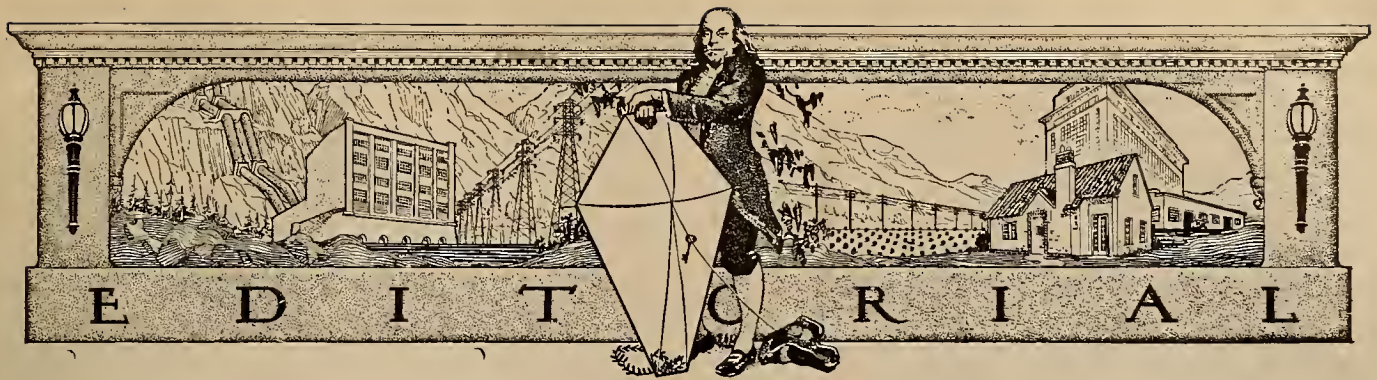
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Central Station Merchandising

THE only cloud in the horizon of the electrical West has been dispersed in the defeat of the proposed California Water and Power Act. Leaders of the electrical industry see that, as a result of the campaign just brought to a close, the electrical idea with its manifold applications in the home, has been advanced among the people fully ten years.

THERE is in California at the present time unsold electric power totaling some two hundred thousand horsepower. The central stations of the West will undoubtedly enter upon a campaign in the near future in the selling of electric ranges that will surpass every previous effort of the past. In the West the climate is ideal for the use of the electric range and water heater and rates are low enough to make electric service in the home within the reach of the average householder. While we have advanced in these uses of electricity in the home far beyond any other section of the world, a beginning has only been made.

PLACING an electric range and water heater, with one out of every five residential consumers has already been accomplished in certain districts of the West—namely, in the territory served by the California Oregon Power Company, the Idaho Power Company and certain districts in and about Spokane. This shows what can be done. It means that there is an immediate market open

among the million and a half residential consumers of the West for the sale of three hundred thousand electric ranges.

THE central station has the advantage in the merchandising of electric ranges in that the public feels a sense of guarantee of good service that cannot be brought about in any other way. The central station should, however, take cognizance of the contractor-dealer and his peculiar fitness for running down prospects. Central stations should take the dealer into consideration and the selling of these ranges should carry such a differential as to fully reward such cooperative sales effort as the dealer may render.

TO the contractor-dealer, and indeed to all those engaged in the merchandising of electrical ware, this gigantic drive ahead for the electric range should be most welcome news. Once the prevailing low electric range rate has been taken advantage of, all other electric appliances may then be carried on the line at the same basic rate. Hence, we see sales of electric washing machines, vacuum cleaners, transformers, conduit and switches, open up at once for these three hundred thousand new prospects. Conservatively speaking, such a sales opportunity points to a present day market in the West of some three hundred million dollars.

LET us welcome, then, the revival of this type of central station merchandising.

The Lesson of the Water and Power Controversy

THE people of California, in their endorsement of water power development under commission regulation as it has prevailed in past years in that state, went on record in no uncertain terms at the polls on November 7 by defeating a proposed amendment to the constitution, designed to bring water power under state ownership, by 250,000 votes. Few issues have ever been so intelligently presented to the voters of America. The final outcome is a rejection of state ownership by an overwhelming vote of more than two to one.

The future should see nothing injected into the political situation that would have a tendency to destroy the unbounded confidence the people have thus expressed in the method of power development as it now is in California. That this situation may be maintained, leaders of the electrical industry must continue as in the past to keep well in the forefront of engineering achievement. They must continue to study economies in production in order that with ever-increasing advances in the art, cheaper and cheaper power rates may be available to the consumer. And, above all, the hand of the utility commissions must be strengthened. The principle of commission regulation is the highest exemplification of a democracy giving to the American mind the fullest play of initiative, yet holding it under complete control for the public interest.

It is well that consumer ownership be extended until every consumer becomes an owner in the particular utility company rendering him electric service. The utmost frankness which has characterized dealings with the public must continue to be maintained, and in constructive thought, the men of the electrical industry must be leaders and not those who are led.

Actual analysis of the returns of the California election shows that in those precincts where the public was completely reached and where the excellent hydroelectric efficiency of present day development was fully explained, the vote was the most gratifying.

It is true, that certain outstanding objections to the bill just defeated may be cast aside and that new bills may be presented in the future for ratification by the people. But even with all this, so well has the public become acquainted with the California method of private initiative under public control and its beneficent results upon the development of the state that little fear need be felt in the future from such attacks as the one through which California has just passed. The lesson has been well learned. The thoughtful onlooker in the controversy just brought to a close in California can come to but one logical conclusion regarding the possible recurrence of such controversies, namely, that when the voters fully understand that faithful and economic service has been performed on the part of groups of their fellow citizens, working under well regulated public control, they will not destroy what they have created.

Unified Cost Accounting for Privately Owned and Municipally Owned Power Plants

ONE outstanding situation has been evident to every onlooker in the recent water and power campaign in California, namely, the lack of comparable statistical data in municipally operated power plants in order that proper comparisons may be made with privately owned institutions. By this we mean the lack of statistical data that may enable the thoughtful student to make an economic study of the two on the same basis of cost keeping. This can only be brought about by having all power development under one regulatory control so that the same method of standardized accounting may be applied to publicly or privately owned utilities. It is only by the study of past performance that an advance in any industry may be accomplished. The larger perspective that would be obtained under such a unified control is most desirable. It is, as a consequence, extremely regrettable that the people of California, in the recent election, defeated an amendment which would have brought about this unified control. It is not hard to visualize that at some future date this situation will be brought about. The regret is that there will be a delay.

This matter of standardized accounting is of as much interest to the student of municipal ownership as it is to any one else. The light of truth is the only means through which ultimate economic attainment can be reached. Whether one be a believer in private or public ownership, it is by all odds for the best public interest that a unified cost accounting be established, making the facts obtainable and accessible.

Paid Advertising Has No Place in House Organs

THERE has been a great deal of discussion concerning the propriety of the solicitation of advertising by house organs of public utility organizations. It is interesting to note that one of the largest monthly magazines published by one of the largest utility companies of the West has recently excluded advertising from its columns. This is a splendid move and indicates the fact that full recognition is now given to the place that the house organ occupies in the technical and engineering world.

The propriety of the solicitation of advertising by the house organs of business and industrial organizations is open to question. The house organ meets a definite need, and, if intelligently conducted, performs a real service that can be done in no other way. The minute it is attempted to make it a revenue producer through the solicitation of advertising, there is always the question as to whether the advertiser responds to the solicitation through a belief in the intrinsic value of the house organ as an advertising medium, or through the fear of offending a powerful organization from which he hopes to get business. Many of the better class of house organs are recognizing this condition, and are withdrawing

advertising from their columns. "Pacific Service," the house organ of the Pacific Gas & Electric Company, is the latest to take this step, and the publishers are to be congratulated for their excellent judgment, by which, in our opinion, both "Pacific Service" and the company cannot fail to profit.

The Injustice of Not Taxing Municipally Owned Power Plants

THE situation of an unbalanced tax status in different communities of the West is each day becoming more evident. As an example, last year the people of Los Angeles paid to the state of California through the distributing system then owned by the Southern California Edison Company the sum of a third of a million dollars. Next year, because the distributing system has been taken over by the city of Los Angeles, this sale of power will go tax free.

This is due to the fact that the people of California have elected to pay a large percentage of the state taxes by assessment on the gross earnings of public utility corporations, leaving the municipally owned institutions tax free. As a result of this legislation ten per cent of the gross earnings of these corporations now goes to state and federal taxes. Hence, when a city owns its own electric power supply other communities of the state pay higher taxes. In the case of Los Angeles the third of a million dollars that will not be paid by that city next year must be made up by other sections of the state in order to meet the state budget of expenditures. In a word, San Diego, Sacramento, Oakland and San Francisco, combined with other communities of the state, will pay this third of a million dollars that citizens of Los Angeles cease to pay through their taxes on the gross power sales.

Municipally operated power plants and distributing systems should either be subject to a similar payment of taxes or taxes ought to be levied on some other more equitable plan.

As time goes on the situation becomes even more unbalanced. It is to be regretted that Amendment No. 10 on the ballot in California, which would have equitably adjusted this unbalanced situation, was defeated at the polls on November 7. Undoubtedly, the all absorbing interest connected with the proposed Water and Power Act, which was overwhelmingly defeated, caused this amendment to suffer defeat largely through neglect. The fact that this unbalanced tax situation prevails should lead thoughtful citizens to consider ways and means whereby it may be bettered at the earliest possible moment.

The Economic Waste Attendant on Duplication of Electric Service

EIGHTEEN months ago the legislature of the state of Washington passed an amendment to the regulatory practice of that state making it necessary for a new utility wishing to enter a field, to show

cause of convenience and necessity for its entering before an enabling certificate would be granted. Before this could be put into operation the referendum was invoked. At the elections on November 7 the voters of the state of Washington refused to ratify the legislation.

It would seem that more human suffering is necessary before people generally can see the absolutely false doctrine of duplication in electric service, and before they can learn that only through a sympathetic understanding of the broadest principles of cooperation can the best evolution in utility service be brought about.

Years ago California tried the competitive method. Electric consumers found that duplicate pole lines on a street simply prevented the larger spread of distribution to a neighbor who otherwise could receive electric service at no extra cost. They found that the competitive method existed only in congested districts with the non-competitive centers paying for this costly duplication.

The late John M. Eshelman, who contributed such constructive thought to regulatory ideals of the nation, in the early days of California's public utility regulation, put as his basic principle the avoidance of duplication in transmission and supply of hydro-electric energy. Experience has well borne out the wisdom of this great thinker.

Perhaps we must still pass through, as H. G. Wells points out in his "Outline of History," a period of war and counter-war in industrial evolution before men may realize that cooperation is the only way in which the ultimate development of the social order can be reached. At least it would seem so in the state of Washington. The people of Washington will find that every time a transmission line is duplicated and a service paralleled, eventually the people pay.

This does not mean that the whip of progress should not be held over the heads of utilities serving a community. These utilities should be urged to make every economic effort; but the stimulus should come from increased reward for effort rather than through punishment. Cooperation is a word of many letters, but its precepts are few, and they depend largely upon simplicity and faith, combined with a sincerity of purpose, looking toward doing a good job on the part of the servants as well as on the part of the served. And if these fail, then there is always the final whip of a certificate of convenience and necessity that can be granted to others to bring about the desired end.

RADIO BULLETINS

The Journal of Electricity and Western Industry broadcasts a special industrial and business news report each Monday night at 7:30 o'clock from San Francisco. This report is broadcasted from station KLP, operated by the Colin B. Kennedy Company at Los Altos, California, on a wave length of 360 meters.

CURRENT COMMENT



That eastern manufacturers are awakening to the tremendous potential market for electrical supplies and appliances which is awaiting development in

Opportunities Seen in Western Markets

the West is apparent in the announcement that the Hurley Machine Company will open permanent offices in San Francisco.

Mr. Edward N. Hurley, president of the company, and former chairman of the Shipping Board, in a recent interview has presented some views which will be of interest to the entire industry. Mr. Hurley said in part as follows:

"California has just placed herself on record, by the defeat of the proposed Water and Power Act, in a manner that has won the esteem and gratitude of every other commonwealth of the nation. Should this proposed enactment have been passed, every other section of the country would have been faced with the same pernicious legislation.

"The Hurley Machine Company, which I represent, is so enthusiastic over the immediate future of the West as a result of this firm stand on the part of citizens of California, that it is establishing permanent offices in the Rialto Building, San Francisco. The Pacific States Electric Company will continue to act as our jobbing representatives throughout the Pacific Coast states. We are anxious to see the excellent goodwill that prevails among the people of the West toward its public utilities maintained.

"My thought is that one of the best means whereby central stations may in the future still further cement this friendly relationship with their consumers is for them to push the sales of electrical appliances in the home. By this means there is established a close bond of interest between the two in the lightening of the labor in the home and the raising of the standard of living in each household through electrical appliances that can be established in no other way.

"I shall cite an instance of what can be accomplished by the central station in a brief period in the sale of household appliances: The Hurley Machine Company has been selling home electrical appliances for the past fifteen years and many sections of the country have made rapid strides toward increasing sales during campaigns. The question as to the best method of merchandising home electrical devices is a vital one to the industry and I know how keenly interested you are here in the West in ascertaining the facts as to how any new avenues of approach have been made by central stations or electrical dealers.

"The Pacific Power & Light Company, with operating headquarters in Portland, and serving 24,000 residential electric consumers in seventeen smaller communities in Oregon and in Washington, held a campaign during October and sold 355 Thor washers during the month. The outstanding feature of this campaign is the fact that the men who led in sales were meter readers, truckmen and linemen who were accustomed to entering the homes of the customers and meeting the housewives. This proves that the central station with a complete organization, whether in the sales department, line department or meter department, properly organized with executives with one objective—to put over sales in the home—can accomplish that which they go after.

"The largest city served by the Pacific company has a population of only 18,000. The town of Kennewick, which is a representative community served by the company, and which has only 654 electric residential customers, bought fifty washers during the campaign. The best previous month's record on the Pacific company system was in October, 1921, when 236 washers were sold. The officials who directed this campaign have performed a great service to the electrical industry in showing what can be accomplished by concentrated effort. They are Lewis A. McArthur, vice-president and general manager, John V. Strange, assistant general manager, and V. H. Moon, appliance sales superintendent.

"I do not wish to be understood as saying that the dealer is not a strong element in the merchandising of household electrical appliances. His co-operation is essential to success. But I do believe before you in the West at the present time is an era of unexampled opportunity in the sale of household electrical appliances, and the central station must be the leader in taking advantage of this opportunity."

An example of the constant experiment and research which characterizes the activities of the large electrical manufacturers is the announcement of the per-

Super-power Vacuum Tube Is Developed

fection of a million-watt vacuum tube, by the General Electric Company. Since the successful development of the small vacuum tube for radio, engineers have realized the possibility of the vacuum tubes replacing certain kinds of rotating electric machinery for power conversion work.

Some idea of the economic importance of this development for use in the generation and transmission of high voltage direct current and other engi-

neering work can be gained by a comparison with the machinery now used to accomplish the same purpose for which it is designed. Although fifty times greater than any tube now in use it weighs but sixty pounds, while a rotary converter of equal capacity weighs 20,000 pounds. Super-power tubes of this type will be of great importance where very high frequency generators or high voltage rectifiers are required.

The maximum distance to which electricity can economically be transmitted is several times greater with direct than with alternating current. The difficulty has been in the generation and distribution of high voltage direct current. It is such difficulties that may be solved by vacuum tubes.

The output of this tube is approximately forty amperes at 25,000 volts; about 1,000 kilowatts. The tube serves as a rectifier to change alternating current to direct current and is also adapted as an inverter to change direct current to alternating current of any frequency, or to convert low frequency alternating current to high frequency.

To protest against any increase in express rates and to urge upon the Interstate Commerce Commission the contention that the revenue per shipment is

Protest Against Increase in Express Rates

higher and the cost of handling less in the fifth express zone (California, Oregon and Washington), than in other zones, representatives of the California Rail-

road Commission have gone to Washington to appear before the national body at the hearing of the application of the American Express Company for an increase in rates.

On October 20, 1922, the American Railway Express Company filed its application with the Interstate Commerce Commission for authority to increase interstate express rates throughout the United States to an extent necessary to make up an alleged deficit to the express company and to the railroads, amounting to approximately forty million dollars, plus a reasonable return. Granted, this would mean another increase in express rates of approximately 15 per cent.

Following return of the rail carriers to private control the express company acting under the provision of the Transportation Act applied to the Interstate Commerce Commission for a 26 per cent increase in rates. The commission increased the rates 12½ per cent, the increase to accrue entirely to the express company. The California Commission, on application by the express company for an increase in state rates to harmonize with the interstate rates, granted a similar increase, declaring, however, in making the award, that if the express company again applied for an increase, it would have to make an affirmative showing that its rates were not reasonable.

Then followed the order of the Railroad Labor Board awarding an increase in wages to express employees approximating \$40,000,000 with the granting of an increase of 13½ per cent in express rates by the Interstate Commerce Commission to

meet the award. The express company, in its appeal to the California Commission for an increase in state rates, did not make an affirmative showing and the rate was denied. The company declaring the refusal of the California Commission to make state rates harmonize with interstate rates, created an interference with interstate commerce, then took the matter up with the national body. A hearing was held in San Francisco on March 25, 1921, and on May 3 and 4, 1922, before the Interstate Commerce Commission, the California Commission representatives urged a general investigation of the express rates throughout the country.

On July 6, the Interstate Commerce Commission announced its determination to institute such an investigation. As soon as such hearing was announced the California Commission suggested a conference with the Oregon and Washington Commissions, the other states in the fifth zone, for the purpose of permitting the Pacific Coast to present a solid front in its protest against any increased rates. A conference was held in Portland on October 16, resulting in a request to the Interstate Commerce Commission that that body command the express company to furnish at the hearing of November 20 such data as could be determinative of the rates required in the various territories.

The express company contended at its hearing before the Interstate Commerce Commission that the refusal of the California Commission to allow the increase of 13½ per cent had caused the express company reduced revenue to the extent of approximately one million and a half dollars per year.

Declaring that Portland's greatest need is the development of its back-country, the Portland Chamber of Commerce a few months ago decided to make the

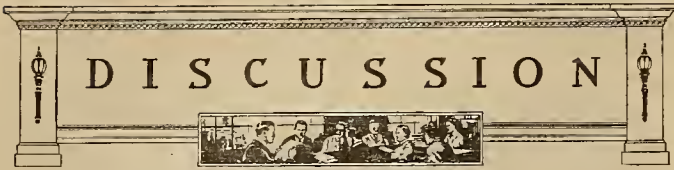
Portland Body Adopts State Development Plan

development of Oregon the major work of that body. Plans have recently been formulated whereby this may be accomplished and active work will commence at once. The program for upbuilding the state embraces the perfection of plans for giving active, aggressive aid to the producer in marketing his products, and a comprehensive land settlement plan for the state, as well as extensive publicity work, both local and national.

"Portland Commerce," the weekly magazine of the Chamber of Commerce, comments editorially:

"The question may be asked, 'Why is this upbuilding of the outside state Portland's work?' It is Portland's work because it is something that needs to be done and is not being done. The great state development move that has made California the most populous state of the West started in the cities, where the means and organization were, and was taken up by the outside state when the country, through the results of the work, was made able to take a part. From a less altruistic, but none the less compelling point of view, the upbuilding of Oregon is Portland's work because Portland has grown out of proportion to the rest of the state and cannot grow much greater until the rest of the state catches up."

Marketing, land settlement and publicity. It is a comprehensive and practicable program.



Exception Taken to Article on Municipal Utility Accounting System

To the Editor:

Sir: Some time ago my attention was called to an article appearing in the June 1st issue of the *Journal of Electricity and Western Industry*, by Paul Eliel, entitled "Uniform Accounting for Municipal and Private Utilities."

I have gained a great deal of first-hand knowledge of the accounting methods of municipally owned public utilities in the last fifteen years and have done my part in endeavoring to improve the accounting procedures. That there is great room for improvement cannot be denied. Without arguing the demerits of municipal ownership and operation, it must be apparent that no good end is served by making statements and inferences which cannot be supported by facts, and the attack by Mr. Eliel on the accounting procedures of the Pasadena Lighting and Water Plants, the Municipal Railway of San Francisco, and the Hetch Hetchy Water Supply are unfortunate.

In an endeavor to give accurate facts on the subject I have prepared the following answer to Mr. Eliel's article.

There is no closed season for criticism of municipally owned public utilities. Attack on them is no doubt popular because so many wild statements are made by fanatical proponents of municipal ownership. Every dyed-in-the-wool Socialist and every Communist will insist that every municipally owned utility is a success. But merely because that is obviously incorrect, it does not follow that every municipally owned utility is a failure, nor does it follow that the accounts of all municipally owned utilities are improperly maintained. Likewise, it does not follow that privately owned utilities all maintain their accounts properly, or that the comparison one person would make, is necessarily an acceptable or an illuminating comparison to another.

In the June number of the *Journal of Electricity and Western Industry* Mr. Paul Eliel, in an article on uniform accounting for utilities, makes general charges and implications against municipally owned utilities which will not be challenged by anyone familiar with the accounting methods of our cities and towns. But Mr. Eliel is most unfortunate in the choice of his "horrible examples." For example, we read:

"During the initial stages and often for many years following the inauguration of any public utility enterprise, every argument as to success or failure naturally revolves on the question of whether or not the project is actually making a profit. Thus after almost a decade of operation the Municipal Railroad in San Francisco still finds its way to the front page of the papers at not infrequent intervals in regard to this important question."

Here the inference is that the gain or loss on the operations of the Municipal Railway is obscured by improper accounts. The accounts of the Municipal Railway of San Francisco are rigidly maintained according to the classification of accounts prescribed by the Interstate Commerce Commission. Not only

that, but so-called comparison entries are made, accounting taxes, licenses and other charges, which the city does not have to meet, purely for the purpose of enabling comparison with privately owned utilities of similar character.

The End Justifies the Means

Because the Municipal Railway of San Francisco sees fit to determine its depreciation charges by an unconventional method, one that is very simple, it is regarded by some accountants and engineers with suspicion. For all of its simplicity the method is quite as scientific in detail as the customary tables of depreciation that are conventionally used by privately owned utilities. And it has the further merit of rigid application, without variation, without regard to income taxes, showings for financing purposes, etc., thus facilitating comparison, one year with another, with other railroads, and in other ways.

Other examples cited by Mr. Eliel are those of the electric lighting plant and the waterworks of the city of Pasadena. The exhaustive reports that are prepared by the Lighting Plant of the city of Pasadena are comparable in every way with those of privately owned utilities. The criticisms that are made of the reports of the Pasadena Waterworks would apply with equal justice to the reports of many privately owned utilities, as no one knows better than the public accountant who specializes in that kind of work. It is wicked to suggest impropriety in the \$55,000 annual depreciation charge on a water plant with a total investment of approximately \$1,500,000, in the case of the city of Pasadena, as compared with depreciation of "about" \$80,000, for a water plant carried on the books at "about" \$7,000,000 by the San Diego utility. Either or both rates of depreciation may be right, or may be wrong, but it does not follow that the one is wrong if the other one is right. Such suggestions, such implications should be supported by proof.

Accounting Conforms to Commission Ruling

Mr. Eliel suggests that the remedy lies in the demand of the citizen stockholder that publicly owned utilities conform in their accounting practices to the principles laid down by the Railroad Commission, for privately operated companies. This statement is made in the face of the fact that the author knew, or should have known, that the accounting of the Municipal Railway of San Francisco, of the Pasadena Lighting Plant, and of the Pasadena Water Works does conform with the principles laid down by the railroad commission for privately operated companies.

Specific obedience to the classifications prescribed by the railroad commission will not necessarily reflect all the facts. It is perhaps just as well that municipally owned utilities may experiment in accounting, as in other matters.

In Regard to the Hetch Hetchy Project

There is always a danger on the part of professional men, whether they be engineers, accountants, doctors, dentists, or specialists in any line, that they will view the world only through their own periscope, never really rising to the surface, or if they do, never getting up high enough to see that there are other people and other interests besides their own. As an

example of narrow views on accounting, the following specific charge is quoted:

"Another example of the dangers of improper accounting in a publicly owned project comes to mind in connection with the Hetch Hetchy project. The cost of construction of this project is carried according to the engineer's primary interests, namely, the cost by physical divisions of the work."

It is an unsupported conclusion that such accounting, according to the engineer's primary interests, cost by physical division of the work, is improper accounting. Again we quote:

"Classification of these costs by functional operating units is not shown, nor is any effort made to separate that portion of the investment properly chargeable to the power enterprise."

Here is plenty of material for discussion. The Hetch Hetchy project is primarily a project for furnishing the city of San Francisco with water. The power project is purely an incidental by-product. Just so the construction of the Hetch Hetchy Railway is a by-product of the general construction program. No fair-minded person will point to the Hetch Hetchy Railway as an example of failure of a municipally owned and operated steam railway, merely because the operating revenues of the Hetch Hetchy Railway represent the nominal amounts that are received for carrying freight other than that directly connected with the construction of the Hetch Hetchy water supply. If the Hetch Hetchy Railway is abandoned upon completion of the water supply system, obviously the cost of the Hetch Hetchy Railway will be an integral part of the cost of the Hetch Hetchy water supply system. But should it be decided to continue the railway as an individual operating unit, or possibly even to extend it, then it will be necessary to set a value upon the railway as such, to give the Hetch Hetchy water supply credit for that value, and to set up that value as the investment of the Hetch Hetchy Railway. Only a prophet can foresee these matters for accounting purposes before they are determined facts.

"It is doubtful whether under any circumstances it will be possible to segregate these items at some time in the future in order to allocate the income and expense of the system when it becomes an actual going concern, and it is doubtful whether it will be possible to accurately set up the proper depreciation charges on the various elements comprising this enormous undertaking."

It will be just as easy to determine the depreciation charges of the several units of this enormous undertaking as it is and as it will be to set up the depreciation on smaller undertakings. In any event, accountants get their depreciation figures from the engineers and one may safely depend upon the engineers of the Hetch Hetchy project for the necessary depreciation figures.

Should a Division of Costs Be Made?

Where a tunnel has been driven through the mountain and advantage is taken of the fall to secure water power, it may be in the mind of some that the cost of the tunnel ought to be considered as part of the cost of the power plant, just as the power house and the machinery therein will be a part of the cost of the power plant. And by the same token, it may be assumed that the cost of driving a tunnel purely for the purpose of conveying the water through a mountain, without a power station at the far end, is a part of the cost of the water system.

The fact that the same water passes through the two tunnels, and that both tunnels are constructed for the purpose of conveying water to San Francisco, is of course an unimportant detail.

At all costs it must be shown that every municipally operated plant is a failure, and that all accounting of municipal undertakings is faulty. If the cost of driving the tunnel does not make the power plant show a loss, add all or part of the cost of the reservoir, or dam; allocate, distribute, add imaginary charges for taxes, administration, legal expenses, etc., to make it show a loss.

Much depends upon the point of view. If the Hetch Hetchy water supply is looked upon as a dozen separate enterprises, as a combination of a water supply system, a series of power plants, a railway, a general warehouse, a hospital, and a series of camp boarding houses, it will be very easy to prove that the present accounting system is inadequate and does not reflect comparable figures with privately owned undertakings of the same character.

What Is the Goal?

If the Hetch Hetchy water supply system is looked upon as a system designed to supply water to the city of San Francisco, that it is in the course of construction, and that incidental to that construction it has been found profitable to utilize and develop the water power possibilities, to build a railway, to facilitate hauling of material for the construction of a dam, power plant, tunnels, etc., to conduct a hospital, a general warehouse and a number of camps,—then it would seem obvious that the first duty of the accountant is to devise a system of accounting which shall assist the engineer in checking the actual construction costs against his, the engineer's, estimates. And that, before there can be any discussion or comparison of costs between this and other water supply systems, power systems, and railway systems, there must be actual operation of the main feature, the water supply system.

The railway and the power systems are purely incidental to the main project. It is childish to suggest that the engineers adapt their classifications to the preconceived notions of an accountant, however capable. The accounts should be maintained in such a way as to reflect the facts at a given particular time. During the construction period certainly the accounting facts should be presented in such language as engineers understand. When the construction period is over, and the operating period commences, then it is time to present the accounting data in the language which operating officials and financiers understand.

Credit where credit is due. There are a dozen examples of faulty accounting of municipally owned utilities available, but the municipal railroad of San Francisco, the Pasadena lighting and water plants and the Hetch Hetchy water supply cannot fairly be included; they are conspicuous examples of accounting methods that might profitably be studied by privately owned utilities.

WILLIAM DOLGE,

Secretary, California State Board of Accountancy,
President, California State Society of Certified
Public Accountants.

San Francisco, Calif.
Oct. 10, 1922.



streets, but in the charm and special value placed upon the electrical Christmas gift. Last year the Christmas tree and Civic Center illumination shown above was the central feature of the holiday season in Denver, Colorado.

AT no time does electricity play a more intimate part in adding to the comforts and pleasures of life than it does at Christmas time, not only in the spectacular glories of Christmas illumination, from the home to the store and city

Start Your Christmas Selling Early

By Thos. F. Chantler

Of the Staff of the Society for Electrical Development

PLANNING a Merchandising Campaign that will score heavily on the cash register of the dealer who studies the public rather than the calendar, in planning his Christmas activities.

RECENTLY a shrewd student of electrical affairs was reported to have said that if he had it in his power to make one gift to electrical dealers for their benefit, he would want that gift to be the tendency to study the public, rather than the calendar, in planning their merchandising activities. Naturally, of course, he was asked to explain his meaning and did so in these words:

"What I mean," he said, "is this: Engage the average dealer in discussion regarding his merchandising activities and the chances are you will find that the Christmas merchandising season is, in his opinion, a period beginning three or four weeks before Christmas and continuing until December 24. He has equally definite ideas regarding the extent of other special merchandising activities occurring within the year. Consult the public, on the other hand, and you will find that plans for the purchase of this or that Christmas present are a-foot weeks and weeks in advance of the time when the dealer is ready to make the sale.

"To make my meaning perfectly clear," he continued, "suppose we were to have one hundred typical electrical dealers stand in a row, and in another row, facing them, one hundred householders typical of the buying public. Now suppose we were to go along the line of dealers asking each one in turn to mention the period during which he engaged actively in selling Christmas merchandise. We would find, I will venture to say, that the dealers were almost one hundred per cent in accord in the way they

marked the calendar to indicate that period; but turn now to the row representing the public and ask each individual in turn to define the period within which he or she attended to the buying of Christmas presents. This man will reply that he left all of his buying until the last minute; the next one, that he frequently had bought and laid aside Christmas presents two and three months in advance of De-

cember 25. Another one would chime in with the information that he had been quietly making payments for months on a washing machine that he planned to have paid for and ready to present to his wife on Christmas day.

"In other words, the dealer tends to regulate his Christmas selling activities by the calendar; the public by its pocketbook.

"Let the dealer start his Christmas selling early and he will find the public just as ready and willing to respond as at a later date."

Start Your Christmas Selling Early

In countless households served by dealer-readers of the Journal of Electricity and Western Industry, family councils have already been held and serious discussion given to the question of expenditures for Christmas presents. Mr. Average Householder's wife perhaps may have hinted that she was hopeful that Santa Claus would bring her an electric cleaner, and that if he wanted to include a washing machine, she would leave the kitchen door unlocked in case he found the chimney too small. But Friend Husband,

assuming that he will have to pay cash for such appliances, may tend to discourage that idea, suggesting that perhaps Santa Claus may find it more convenient to supply something less costly, and right in that sentence is a very good illustration of why it pays to start the Christmas selling early.

Suppose that on the day preceding that important conversation Friend Wife has observed in the window of Blank's Electric Shop an electric cleaner such as she wants, and lingered before the window reading this placard:

Give Her This Cleaner

Our Christmas Purchasing Plan makes it easy for you to pay. Santa Claus will deliver this present to your home for \$0.00 down.

Come in and leave your order now.

Now re-cast that scene described in the preceding paragraph. In addition to being informed that his wife would like a cleaner for Christmas, the hus-

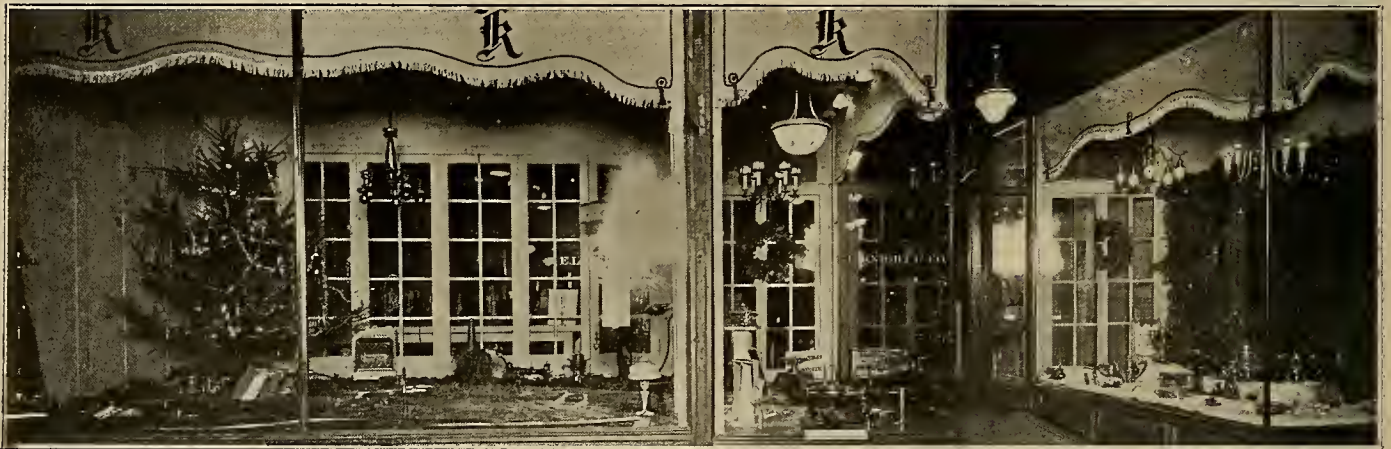
forces the more or less philosophic practice of doing without 'this' in order to purchase 'that.' Merchandising, therefore, has become a monthly contest between 'butcher, baker and candlestick maker' to effect sales while yet such families have funds available for new purchases.

"When the furniture dealer, for instance, steals a march on you by selling a new dining room suite to a customer, the result is that you will probably not be able to sell that person an electrical appliance until next month or some time later. Consequently, that merchandiser whose selling tactics are most progressive, other things being relatively equal, wins most consistently in the race to sell while the selling is good."

That statement needs no explaining and it pictures conditions very accurately. Bringing the public to buy specific electrical appliances for Christmas presents entails, first of all, selling the public on the general idea of buying something electrical. Merchandisers in other lines are equally set upon having the public buy something in their particular line. Electrical dealers, however, can score a big advantage and get over the buy-something-electrical idea very effectively by acting concertedly in this matter of beginning the Christmas selling early.

A Plan That Will Help Bring the Christmas Dollars Into the Electrical Field

Suppose, reader—to make this personal—that there are eight millinery shops in your city. Suppose,



The attractively decorated windows of E. L. Knight, of Portland, suggest to those who pass that "electrical gifts make wonderful gifts."

band is told also that Blank's Electric Shop has a Christmas Purchasing Plan that will enable Santa Claus to buy that cleaner without ever really missing the money.

If that word picture is typical of actual happenings in American households, then one reason for starting the Christmas selling early is made evident. But there is another and even more important reason, which refers to competition, although not competition in the sense that it is customary to think of it.

To Sell Early Is to Sell While the Selling Is Good

In the foreword of a recent monograph, "Profitable Practices in Appliance Selling," issued by The Society for Electrical Development, this statement occurs:

"Few families in America are in a position to buy without having to stop and count the cost. In the great majority of households, limited incomes prevailing, necessity

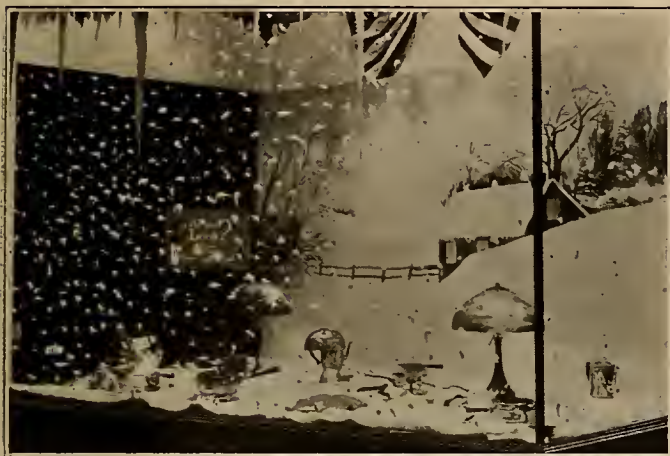
further, beginning November 10, that as you go about town you note that all of these shops have their windows trimmed for Christmas, that the interiors of the stores are colorfully lighted and that the spirit of Christmas supplies the keynote. Suppose, further, that each of these stores puts over the same general message to you,—this: Buy her a hat for Christmas. We will leave it to you if that suggestion would not get home to you. Would not your tendency be to do just that?

Now, still keeping that thought in mind, let us imagine how we can make an equally favorable impression upon the general buying public, starting the Christmas selling early and putting over the thought, "Buy Something Electrical." Consider, first of all, that there is a psychological appeal about a lighted Christmas tree that strikes a responsive cord in almost everyone. It matters not whether the tree be a towering big fellow suitable only for a municipal

display, or whether it is a diminutive little affair not much larger than a holly wreath; it strikes a responsive something in us and is appreciated accordingly. Does that not supply the means whereby all electrical dealers can unite in a concerted campaign by, first of all, attracting the Christmas dollars into the electrical field, deciding thereafter by their respective merchandising ability how that business is to be divided?

A Christmas Tree in Every Electrical Dealer's Window

Elsewhere in this issue is described the Christmas window trim material that has been prepared by The Society for Electrical Development and is now ready for distribution. The motif for that display is a Christmas tree as shown in the illustration that accompanies this article. In addition, however, to utilizing this material, imagine the effect upon the



The atmosphere and festive spirit of the holidays is well exemplified here

public mind if a Christmas tree of harmonious proportions were displayed in each electrical shop window, the tree being illuminated with miniature lamp sets. What the individual dealer might lose in distinctiveness through collaborating with other electrical dealers in making this same display promises to be more than offset by the combined effect of all such displays upon the public mind, in putting over the basic idea, "Buy Something Electrical." Furthermore, by installing those displays on or about November 15, the electrical dealers will score a lead over their competitors in other lines in the race for the Christmas dollar. It is recommended, therefore, that all dealer-readers of the Journal of Electricity and Western Industry start their Christmas selling early (about November 15) and that they make use of the illuminated tree as the keynote of their window display.

Feature the Easy Payment Plan

Bear in mind that many families, where the total expenditure for Christmas presents will not exceed \$100 or \$150, are perfectly capable of spending that much on one Christmas present, a washing machine, for example, provided they understand that it can be secured on a reasonable down payment and

the balance distributed over a period of months. There are many families, too, where perhaps two or more children will combine to purchase one of the less costly appliances, as, for example, a cleaner, if word is got to them early enough about the ease with which they can finance such a purchase. Placards worded in this wise will help to put over the idea:

An Electrical Christmas Present Pleases the Year Round

Our Christmas Purchasing Plan makes it easy for you to pay. The joy your present will give will add to your pleasure in buying. We have electrical presents to suit every pocketbook and terms within reach of all.

Come in and tell us your wants.

Orders For Christmas Delivery Received Now

We have something electrical for every member of your family. Our Christmas Purchasing Plan makes it easy for you to buy. Santa Claus awaits your orders.

Come in and tell him what to deliver.

Feature an Inexpensive Leader

It seems to be the general practice of individuals in making up a list of presents they will give at Christmas to set down opposite each name on their list, not the present decided upon for that one but the money to be spent upon that person. The selection of presents within those sums comes later. The electrical dealer, therefore, will derive a big advantage by displaying early certain inexpensive items that can be purchased for a sum less than \$5 each. Thus, the passer-by having already decided that he will spend on a present for Tom, Mary or Sally, as the case may be, \$5 and the selection of a present not yet having been made, therefore is open to suggestions, is looking for them, in fact. He sees in your window some attractive little electrical appliance that can be purchased for not more than the sum he has in mind. And if a placard attached to the appliance invites him to come in and inspect it, the chances are that he will do so.

Go Early to Work on the Mailing List

Do not leave it to your window display and your newspaper advertising to tell all the story; let Uncle

Sam help, too. Why not a letter along these lines addressed to all households represented on your mailing list?

Dear Customers:

You have been invited many times in the past, to do your Christmas shopping early and that, of course, is a good suggestion, but this letter is to tell you rather that we are prepared to do our Christmas selling early. Spreading our Christmas selling over a longer period of time will enable us to give better attention to serving our customers; and we assure you that we dislike, as much as you do, those last hour rushes that make it utterly impossible to wait upon you as you would have us do.

Our Christmas stocks are already on display and they are the most complete we have ever offered—something for every member of the family and at prices and terms we are sure will please you. We urge you to make your selections early while our stocks are yet complete and you have the full variety from which to choose.

Electrical Christmas presents please the year round. This year there are many new offerings that will make especially appropriate selections and you will enjoy inspecting them. Why not come in and make your selections now and have us set those things aside for you until later. Just by way of suggestion we particularly suggest that you inspect (describe one or two of your leaders here).

Yours truly,

P.S.—We suggest that you do not buy gift cards to go with your presents as we have exclusive ones already prepared and feel sure that you will like them.

Note: In the Christmas campaign material supplied by the Society for Electrical Development and described in this issue you will find a very appropriate little gift suggestion folder that will serve ideally as an enclosure in a letter such as this. The question of appropriate gift cards is one that many dealers will prefer to solve for themselves. However, it might be a very good plan to have a general card printed for the purchaser's use in connection with an appliance to be given as a Christmas present. A card along these lines, for example, would apply equally well in connection with almost any appliance.

A Merry Christmas

—and 365 happy days thereafter

That's what I wish for you. And I am hoping that this present will help make that wish come true.

It perhaps might serve even better, were a blank space left in the card, where the word "present" occurs; so that the name of the gift could be mentioned.

Sound the Christmas Note in Your Advertising

It's easy to inject the Christmas spirit into your advertising. Even little touches like these, if set off by a small rule border, will help:—

We are showing Christmas stocks early this season. Why not make your selections now and avoid the rush. By making a small deposit you can have goods set aside for you.

For Your Convenience
—we're starting our Christmas selling early.

Why not come early and avoid the crowds. Make your selections now. You can arrange to have goods held for you.



Early Christmas windows mean early Christmas sales, says the Field Electric Company of San Bernardino, Calif.

We're Starting Our Christmas Selling Early

You can shop comfortably now. Our Christmas stocks are on display and we are ready to serve you. A small deposit will hold goods until you want them.

Coach Your Sales Staff

Sell your sales staff on the begin-the-Christmas-selling idea, first of all. Nothing else so cools the ardor of a Christmas shopper, as entering a store that has advertised for holiday business and finding the sales people out of mood with the times. Hold a staff meeting or, if the sales force is small, talk to the members individually and explain how necessary it is that the Christmas spirit be made manifest. Enlist their cooperation in starting the Christmas selling early and keeping it going.



At Christmas time, it has been proved, there is no window display that will stop as many people as that of the electric railroad

The Universal Toy for Window Display

By HAROLD CARY

EVER since the invention of the toy electric railroad its value as a display has been recognized by retailers. At Christmas time, one can walk into electrical, toy, hardware or department stores almost anywhere in the United States and find a display of electric railroads with a crowd watching. Those of us who are not much more than thirty can, no doubt, remember the day when mother or father used to take us on a special shopping trip with the electric railroad display as the chief object of the eager boy.

For a long period, however, before merchandising was studied as acutely as it is today, many retailers failed to realize the importance of the electric train display to the entire store. Competition to get the customer into the store was not understood. Even shrewd men were inclined to regard the purchase of almost everything in any kind of a retail store as a "convenience" purchase, dependent upon the store's location, except when special reputation or a bargain sale brought people to a particular institution.

As the new ideas of merchandising distinguished between articles such as cigars which are really a "convenience" purchase and articles such as men's clothes or women's hats, which are "shopping" purchases, the real value of display that interested the buyer was recognized. A great store like Wanamaker's in New York, holds remarkable concerts, lec-

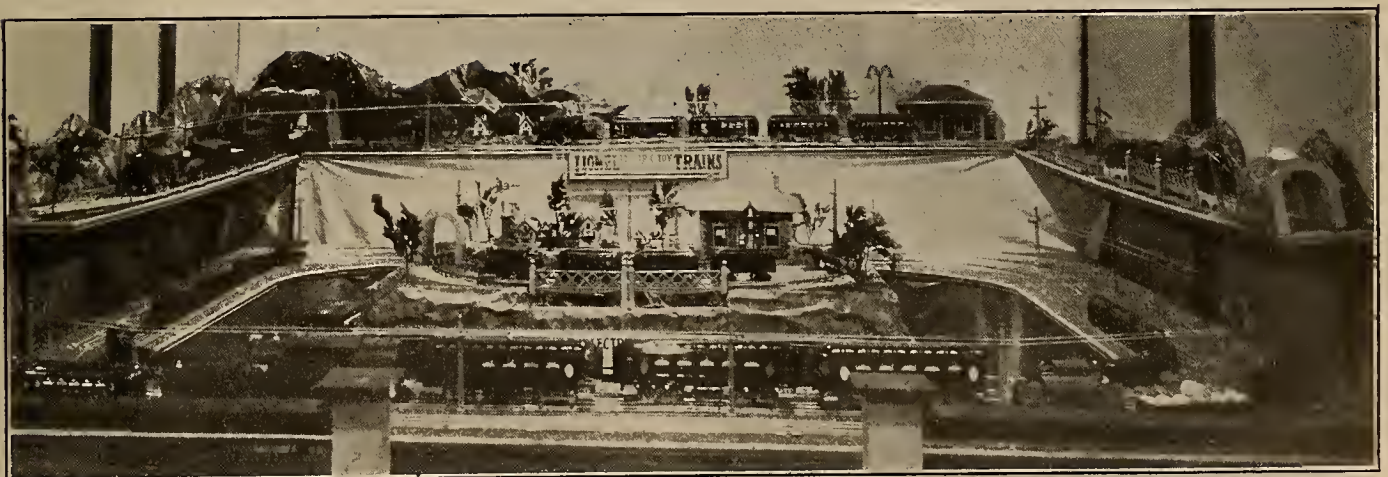
tures and entertainments in an auditorium within the store, just to get people inside. To exist in an out-of-the-way place (and 8th Street is out of the shopping district of New York), Wanamaker's must do real merchandising, advertising and displaying.

At Christmas time, it has been proved, there is no window display that will stop as many people, no counter display that will bring as many people into the store, as that of the electric railroad. Just about as many grownups stop as children.

Last year the whole New York retail world was talking about the way Macy's great windows full of electric railroad display were bringing the people to view them. Macy's, instead of using one window, threw together four windows and built a miniature town and range of mountains through which electric trains sped all day long. Similar but less elaborate displays were used in the toy department.

All over the United States window decorators will make use of electric trains for Christmas displays, not in conjunction with other articles in the window, but exclusively and realistically.

The purpose of all these hundreds of windows will not be to increase the sale of trains to parents. That will follow, of course, but the real reason behind it all will be to stop people, to bring them to the specific store just as a musical would do it, and to build sales for all types of merchandise as a direct result.

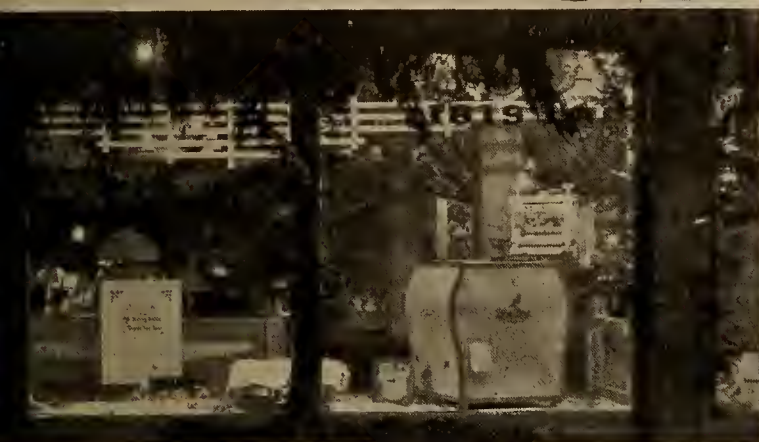


Window decorators are using electric trains to stop people, bring them into the store, and to build sales for all types of merchandise.



Outside decorations should be arranged to be seen from a distance, windows to give the most inviting appeal. Merchandise and decorations should be suggestive of the spirit of Christmas.

Let your store and
windows radiate
Christmas Cheer



The Effects of Low Power Factor*

THE effects of low power factor may be segregated into three classes as affecting service, operating costs and fixed charges:

1. **Service**—Poor regulation; causing variable voltage, unsatisfactory lighting, unsatisfactory power service, making necessary the installation of additional voltage regulators.

2. **Operating Costs**—Additional I²R losses in generators, transformers, transmission lines, distribution lines, making necessary the installation of power factor corrective apparatus.

3. **Fixed Charges**—Additional investment required in generators, transformers, transmission lines, distribution lines, switches, meters and other equipment required to carry the additional current caused by low power factor.

Service. No money value can be placed on good service, but it is generally recognized that good service has a real money value and that a satisfied customer is an asset to a company. Variation in the brilliancy of lamps, variation in the speed and output of motors and overheating of motors tend to make dissatisfied consumers. To correct this evil, induction regulators are installed to regulate the voltage on individual distribution circuits. These regulators improve the service but do not improve the power factor. On some circuits regulators would be needed even if all apparatus were operated at unity power factor but many of them could be eliminated.

Operating Costs. The increase in operating costs due to low power factor conditions are principally increased current losses. On a large Pacific Coast central station system a study was made to determine the system losses with the conditions under which the system was operated and what these losses would have been under unity power factor operation conditions. A tabulation of these losses and costs is given as follows:

Annual losses in generators, transformers, transmission lines and distribution lines under actual operating conditions	269,162,193 kw-hr.
Same losses calculated for unity power factor conditions	198,555,600 kw-hr.
Losses due to low power factor operation	70,606,593 kw-hr.
Assuming a production cost of \$.00686, this 70,606,593 kw-hr. due to low power costs annually	\$484,361.23

Fixed Charges. On account of low power factor all current carrying parts or apparatus from the turbines or water wheels to the consumers' meters must be of larger capacity than would be necessary if all such apparatus was operated at unity power factor. Fixed charges on this additional investment is considered as part of the cost of supplying a low power factor load.

Electrical equipment investment which varies according to current carried:	
Generating stations	\$ 4,979,456.90
Transmission investment	12,269,692.30
Distribution investment	27,123,435.80
Total	\$44,372,585.00

The portion of this investment chargeable to low power factor operation will vary in the ratio of the total kva. transmitted under peak load conditions, to the total kva. which would have been transmitted under conditions of unity power factor operation or to the kw. transmitted.

*Report of Power Factor Committee, Pacific Coast Electrical Association, May 31, 1922.

Kw-hr. transmitted at peak load	213,240
Kva. " " " "	269,000
Power factor of transmitted load	79.3%
Generating station investment	\$ 4,979,456.90
Transmission line investment	12,269,692.30
Generation and transmission investment	\$17,249,149.30

213,240 divided by 269,000 multiplied by \$17,249,149.20 equals \$13,673,637.59. This is then the transmission and generation investment which would be required under unity power factor operating conditions.

	\$17,249,149.20
	13,673,637.59
Additional investment required on account of low power factor (generation and transmission)	\$ 3,575,511.61
Kw. sent out from substations	177,000
Kva. " " " "	244,000
Average power factor of the load	72.7
Distribution investment	\$27,123,435.80

177,000 divided by 244,000 multiplied by \$27,123,435.80 equals \$19,685,611.85, which is the distribution investment which would be required under unity power factor operating conditions.

	\$27,123,435.80
	19,685,611.85
Addl. distribution capital required on account of low power factor	\$ 7,437,823.95
	7,437,823.95
	3,575,511.61

Total additional investment required on account of low power factor	\$11,013,335.56
Fixed charges @ 12% on \$11,013,335.56	\$ 1,321,600.27
Total losses due to low power factor operation:	
Increased operating costs	\$ 484,361.23
Increased fixed charges	1,321,600.27
Total	\$ 1,805,961.50

This cost is 19.12 per cent of the total operating costs and fixed charges on production, transmission and distribution properties.

With the present development of power factor corrective apparatus it is not economical to correct the power factor to unity on all load but it is advisable to correct to unity or even to a slightly leading power factor at all large load centers. By doing this the generating and transmission losses may be greatly reduced as may also the fixed charges in production apparatus and transmission lines.

Assuming power factor correction at the important load centers only, the following savings are possible.

Operating Costs

With power factor correction to large load centers only.

Generation and transmission losses under actual operating conditions	189,319,750 kw-hr.
Same losses calculated for unity power factor conditions	139,767,600 kw-hr.
Losses due to low power factor operation	49,552,150 kw-hr.
Assuming a production cost of \$.00686, this 49,522,150 kw-hr. loss costs annually	\$339,927.75

Fixed Charges

Electrical investment in generating stations	\$ 4,979,456.90
Transmission investment	12,269,692.30
Generation and transmission investment	\$17,249,149.20
Investment under unity power factor operation	13,673,637.59
Additional generation and transmission investment required on acct. power factor	\$ 3,575,511.61
Fixed charges @ 12 % on \$3,575,511.61	\$ 429,061.39
Cost of annual losses in operation due to lost power factor	339,927.75
Total cost	\$ 768,989.14

This cost is 14.8 per cent of the total operating costs and fixed charges on production and transmission properties.

In this report it is not the intention to show the costs of obtaining power factor correction either as capital outlay or operating costs, but merely to show the gross savings possible. The real meaning of the above figures on savings possible are that this company could afford to expend \$768,989.14 annually

in fixed charges and operating costs on power factor correction apparatus to increase its power factor to unity at all important load centers and greatly improve its service at no greater cost than it is now expending for service such as is rendered.

It could afford to expend \$1,805,961.50 annually in a similar way to increase its power factor to unity at each of its consumers' services.

In practice this would of course not be done but instead such corrective apparatus would be installed at important load centers as could operate with a reasonably good annual load factor and earn a good return in savings of losses and on the investment required. On account of the large wattless component supplied by generating apparatus when operating at a slightly leading power factor and at the expense of a very small additional current, it is seldom advisable to operate generating equipment at unity power factor and then to supply the wattless component required by the load by corrective apparatus at considerable investment and operating costs.

Many of the similar central station companies of the Pacific Coast who have long high voltage transmission lines with large capacity effect in comparison to the total load on the system, experience considerable trouble with voltage regulation at the load. During the heavy load season the wattless component supplied by the line capacity is insufficient to supply the excitation needed by the system and during the light load season there is an excess of excitation. To obtain good voltage regulation on systems of this kind the best solution is the synchronous condenser operated with automatic field regulation.

Best Means of Power Factor Correction

The best means of power factor correction of large units for transmission purposes will not be discussed; this report will be confined to correction for consumers' loads.

Although the consumer must pay directly or indirectly the cost of correction, the first question to be answered is how much, if any, of the cost should he pay directly.

The two means available to get the consumer to assume directly the cost of power factor correction are, first, commission or company rules prohibiting connection of apparatus operating at lower than a given power factor; and second, application to rates of a discount for good power factor and thus induce consumers to maintain a high power factor.

No information is available to show that the first means has been put into effect as yet, but it is applicable to large consumers where either size of motors or total motor load is such that installation of proper synchronous motor capacity would involve no financial burden, and cost for correction is less than can be supplied by the power company.

There has been more or less application of the second method, particularly in France. Here a certain permissible power factor, usually 85 per cent, is taken as applying to the kilowatt-hour rate. Through the operation of a special meter, several of which are on the market, the consumer is penalized for a power factor lower than 85 per cent and often given a bonus for a higher one.

This meter measures both active kilowatt-hours and reactive kilowatt-hours, the registration being the total active kilowatt-hours plus a percentage of

the reactive kilowatt-hours at less than the permissible power factor, or minus the reactive kilowatt-hours at over the permissible kilowatt-hours. The percentage for which the meter is adjusted is that percentage of the active kilowatt-hour rate which is to be charged for the reactive kilowatt-hour.

In discussing the question of power factor, it is evident that consumers must be divided according to size of installation, and what is applicable to a consumer having a 500-hp. motor is not applicable to one with a 3-hp. motor.

The means available to the consumer for power factor correction are static condensers and substitution of synchronous for induction motors.

The cost for static condensers varies from \$110 per kilovolt-ampere for a 2.5-kva indoor condenser to \$25 for a 30-kva. outdoor condenser.

When the diversity factor is considered, the power company can assume the burden of low power factor and its correction much cheaper than the small consumer. At just what point this ceases to be true is difficult to state, and depends upon diversity factor, class of construction, etc., but probably is not below 150 hp. Synchronous motors are not obtainable in sizes less than 40 hp. For motors up to 100 hp. the addition of static condensers would increase the cost of motor installations by 100 per cent or more. The increased cost of synchronous motors over induction varies from about 100 per cent for a 40-hp. motor to 30 per cent for a 150-hp. motor. It is therefore out of the question to expect power factor correction from small consumers.

A great disadvantage, both from commercial and practical operating standpoints, is that of adding complication to the consumer's equipment.

Improvement of Motors

As the question of power factor receives more attention, it is believed that motor manufacturers will improve materially the power factor of induction motors. Ball bearings, for example, by permitting smaller rotor clearance, will improve the power factor of small motors.

It may be justly argued that payment of the same rates by good and poor power factor consumers is discriminatory. But the application of power factor rates and penalties has two serious disadvantages for small consumers. First, the cost of metering, and second, the complications of rates. It would be very difficult for the average consumer to understand why he should pay for power which does no work for him. The inability of the consumer to understand the justice of any such power measurements has been one of the principal objections found in France.

For larger consumers at present on a maximum demand rate, it might be proper to base the rate upon kilovolt-amperes instead of kilowatts; or, a load limiting device may be employed, thereby limiting the kilovolt-ampere demand to that permitted by the minimum charge.

Much of the low power factor evil is the result of over motoring. An educational campaign on the part of the power companies and motor manufacturers should do a great deal of good by pointing out to the consumer and manufacturers of machinery the fact that installing a motor larger than necessary results in higher power costs.

ELECTRICITY IN INDUSTRY



By Louis F. Leurey
Industrial Electrical Engineer

Electric Truck Proves its Utility

WHEN the Pacific Gas & Electric Company faced the problem of trimming the ornamental luminous arc lamps on the "Path of Gold," Market Street, San Francisco, it became necessary to develop a portable rig with quick raising and quick lowering quality and with auxiliary electrical tower adaptable for cleaning the lamps.

As shown in the accompanying photograph (Fig. 1), a tower wagon was developed for trimming lamps 35 ft. above the sidewalk. This collapsible



Fig. 1

tower is built in three sections, having a maximum lift of 30 ft. The tower is mounted on a one and one-half ton electric truck and is provided with a platform mounted on a turntable so that it may be turned in any direction. The 110-volt battery which

drives the truck is also used to operate an electric motor for raising and lowering the tower. The control of this motor is by rope pull on the working platform with automatic stops at both the maximum upper and lower positions.

Vacuum Cleaner Is Attached

To show the further adaptability of this truck for special purposes, the energy from the battery of the truck is used to drive a vacuum cleaner which is mounted on the under side of the working platform. By means of a rubber hose attached to the cleaner, the particles of electrode dust and accumulated street dust are drawn from the lamp globes and no debris is allowed to fall upon pedestrians on the sidewalk.

Synchronous Motors Reduces Line Losses

IT quite often occurs that industrial plants have certain group loads at considerable distance from the main plant and these loads, due to the use of induction motors of comparatively small size, are often loads of a highly inductive character and the power thus required is difficult to transmit at the ordinary low voltages such as exist in most plants of this character.

Very often this condition can be met in a most acceptable and economic manner by the installation of synchronous motors at the end of the transmission line where these synchronous motors are adapted to some particular type of drive which is incidental to the operation. In all of these cases, the synchronous motor should be purchased especially with the view of its corrective capacity in addition to its requirements as a mechanical prime mover.

In one California lumber company's plant, a considerable block of load had to be transmitted a distance of approximately 1,000 ft. and as the plant voltage was 480, it was very desirable to transmit this without the high first cost and incidental losses of step up and step down transformers. It so happened that the end of this line was a logical location for a direct current generator to supply a yard crane system and the problem was solved by equipping this generator with a synchronous motor having excess capacity beyond the requirements of the generator and having its fields designed for operation under

corrective conditions. This installation made possible the transmission at 480 volts and not only saved considerable investment but also resulted in lowering the total losses through bettering of the power factor.

Electricity for Broiling and Roasting in the Modern Restaurant

WHEN A. C. Morrison and Frank Seyferth decided to open "Morrison's" Restaurant at 165 O'Farrell St., next to the Orpheum Theater, San Francisco, they determined to secure the best possible equipment, as well as the most modern.

Electricity was to play a prominent part wherever possible, but something particularly striking and useful had to be worked out. This part was turned over to Harry Ferber of Nathan-Dohrmann & Company, O. F. Anderson, of the Great Western Power Company, and W. Wesley Hicks, electric heating engineer, who together, worked out a plan for a vertical electrical grill to be used for roasting and broiling meats. The result was a double vertical grill (Fig. 1), one of which is used entirely for roasting, and the other for broiling—being interchangeable by changing the spits and holding apparatus, which may easily be done in a few minutes without interfering with the operations of the grill.

Each grill has a connected load of 40 kw., divided into four sections of 10 kw. each. Each section is controlled by a 3-heat switch. This gives great flexibility of operation—greater in fact than obtainable any other way, as one section may be turned

completely off, one on quarter heat, one on half heat, and the other on full heat all at one time, and the operations may be varied as the requirements of the customers of the restaurant demand.

Construction Principles

The construction of these grills is extremely simple. The elements are carefully supported, and are such as are ordinarily used in the manufacture of electric bake ovens. The coils are supported in refractory material that radiates the heat. In front, a screen prevents damage to the elements from the outside, and the meats are fastened to revolving holders, which allow a single steak or chop to be added, or removed at a time, without interfering with the cooking operations. There is a minimum of grease and smoke.

It has been found from actual experience that meats cooked on these grills retain more of their original juices and are consequently more appetizing, due to the uniformity of temperature control, which could not possibly be secured with any other fuel.

THIS DEPARTMENT

will be devoted to a discussion of new and interesting applications of electricity to industry in western industrial plants. Readers are asked to aid in the solution of the most vital problems facing industry by sending in accounts and pictures of various unusual applications of electricity which have been made in plants with which they are familiar. It is only by thus cooperating with Mr. Leurey that the fullest service can be rendered. Space rates will be paid for all material which is published.



Fig. 1

JOBBER, DEALER AND SALES AGENT



Electrical Society Prepares Christmas Sales Aids

Five Sets of Merchandising Aids Ready for Distribution to Members and Non-members of Organization

Indications are that business will show improvement during the winter months and merchants of electrical equipment feel that this Christmas is going to furnish opportunities for larger sales than in the last few years. If proper preparations are made beforehand, electrical dealers will be placed in a position to "cash-in" on Christmas trade by making it an electrical one.

Various devices, such as window displays, illustrated inserts, to be mailed direct to possible customers, gift suggestion booklets and a host of other advertising devices designed to draw the prospect to the store, are used every year by the wide-awake electrical dealer. There are no set rules that can be laid down for the developing of Christmas selling campaigns, as conditions are different in every locality. The main thing to be remembered is to determine the line of attack that is to be followed through the pre-Christmas season and to start that selling campaign early, then to keep to it until the season is over. Electrical appliances make excellent gifts and a small amount of advertising will surprise the dealer with the excellent returns that follow.

The Society for Electrical Development, Inc., has published an invaluable booklet of suggestions in its monthly "Sales Helps," to aid the electrical dealer in his coming Christmas campaign. This organization has prepared twenty-five ideas for the dealer to use in increasing his sales during the Christmas season. The book is a veritable storehouse of information, not the least of which is a list of twenty-five suggestions to the wide-awake dealer. The suggestions are as follows:

1—Check over your stock of appliances and appurtenances at once. Arrange for a well balanced stock. Be sure to have adequate supplies of both the smaller, popular priced articles and of the larger and more expensive electrical appliances.

2—Plan immediately what newspaper space you are going to use and make a contract with the newspaper or newspapers selected. Order your cuts or mats in ample time to meet your schedule. Remember that in newspaper advertising it pays to use a reasonable amount of space consistently and repeatedly in preference to having one big spread. Introduce the campaign slogans "Make this an Electrical Christmas" and "Buy Electrical Goods at an Electrical Shop" in every piece of copy.

3—Arrange now to have a small display of Christmas electrical gift suggestions on a table

or counter in the most frequented part of your store—this will start your customers thinking along the right lines. Devote an additional table or section of your store to Christmas displays, each week, until by the first of December the whole store has taken on a complete Christmas atmosphere.

4—Arrange unbroken stock, labels outward on shelves, counters or tables according to your usual method of display, taking care to see that they present a neat and timely appearance. Stock so arranged helps to advertise itself and is readily accessible. Display cases should be cleaned out and holiday-boxed appliances and the finer grade of electrical items such as table appliances, boudoir accessories placed in them. A selection of items most suitable for mother, father, children, etc., might be arranged in separate cases. Have every glass case shining like a newly minted dollar.

5—Send a gift suggestion folder to every customer and prospect on your mailing list which you should have been revising and adding to, constantly, during the past year. Search club lists, central station lists of wired houses, the telephone book, city directory, etc., for additional names and select carefully those to be circularized. Solicit owners of unwired homes to wire their house as a Christmas gift. Enclose a gift suggestion folder with every letter and package sent out during December and keep a few continually in a prominent place so that customers may help themselves.

6—Arrange with the best picture theaters in your town to show your lantern slides. Make this arrangement at once before some electrical or other dealer gets ahead of you.

7—Plan four or five good strong window displays. Order your window-display screens at once—one for each window and another for an interior display. Secure stringers at the same time. Use them for your windows and for stretching across your store at regular intervals.

8—Practice what you preach. Make your store inside and out the best illuminated place of business in town. Light attracts trade. Use some colored lights—including red and green to suggest the Christmas atmosphere.

9—Keep trade in town by drawing particular attention to your store. Arrange a parade of boy scouts with a band at their head led by someone dressed as Santa Claus, riding in a spic and span automobile, suitably decorated and carrying the message to "Make this an Electrical Christmas" at your store. A few gift suggestion folders should be distributed by Santa Claus. You might also have a Christmas reception of special day set apart to inaugurate the Christmas selling season.

10—Departmentalize your store to a certain extent so that irons, heaters, table appliances, cleaners, boudoir requisites, fixtures and so on (except the general displays) will be grouped by themselves. This will add emphasis and give greater accessibility to all items. Make full use of counter display cards.

11—Tie in with any "Shop Early," bank-saving, club buying campaign, or other local movement and link up your advertising with that of the jobber and manufacturer whose goods you sell and represent.

12—As soon as you have decided upon your complete Christmas campaign, distribute copies of it in typewritten form for the benefit of your salesmen, clerks and associates so that they may be fully acquainted with your plans. Ask them to make suggestions for their improvement and so enter fully into the spirit of the occasion.



Three-panel collapsible frame work window display screen prepared by The Society for Electrical Development, Inc.

13—Make it easy to buy. Detail one of your sales clerks (preferably a woman) to make up appropriate lists and selections for every member of the family. Also offer to send a salesman with samples to any busy business man. Select with care any extra help you may need as the season advances.

14—Offer a substantial prize (say \$25 in cash or merchandise) to the clerk who makes the largest quota of sales between Dec. 1 and 24.

15—Call up regular customers and other likely prospects by telephone, cordially inviting them to your store. Do it yourself, unless you have an assistant who is gifted with a pleasing voice and has a particular aptitude for telephone solicitation.

16—If it is in agreement with your standard policy, offer a reasonable discount on all purchases for cash before Dec. 10. This will induce people to shop early and relieve congestion. Or, instead of offering a discount a selection of souvenirs might be offered—the larger the purchase the more expensive the souvenir.

17—Inaugurate a deferred payment plan for the benefit of good risks so that purchases made between Dec. 1 and 24 will be payable between Jan. 15 and Feb. 1. Your bank will help you with the financing and many new accounts will be started in this way.

18—Use poster stamps on all letters, bills, statements and packages sent out from now on.

19—Supply cards on which your name and address and an attractive Christmas design have been printed, with space left for the writing of a personal greeting by the purchaser. Have a table, chair and pen and ink ready for customers who wish to send these cards singly or in gift packages to their friends.

20—Keep your tables of stock and all parts of your store and windows immaculately clean. Replace all goods sold from the tables and visible displays at regular intervals without interfering with the general business of your store.

21—Advise your salespeople what to push. Pick out, daily, some article as a leader. Instruct your salesmen to ask customers if they have considered this or that electrical item as a gift in addition to the one they came in to purchase.

22—Install a "How-It-Works" booth in the back of your store where demonstrations can be held to show the working of any electrical appliance. An electric range for baking cookies and buns for distribution might be a standard attraction in the booth.

23—Tie all packages with red or green cord and offer to deliver all purchases free of charge within a reasonable distance. Keep a "tickler" file to assure delivery of any package requested on a certain date.

24—Supervise your store effectively and don't be tied down to your desk. Call on selected customers such as the heads of big business houses or manufacturing plants, suggesting electrical gifts for their customers and for any employees selected to be specially favored.

25—Make this an electrical Christmas not only in letter but in spirit; not only for yourself but for everyone else. Attract people in every way possible; give value, give service and people will prefer to buy electrical goods at an electric shop throughout 1923.

In addition to these suggestions, The Society for Electrical Development has prepared many other Christmas campaign sales helps which compare favorably with the excellent ones that have been furnished by the Society in the past years. Five of these sales creating devices are ready for distribution to the electrical trade.

A three-panel collapsible frame work window display screen in five colors has been prepared which will make a suitable background for any window display.

For window and store interior decoration, a festoon of nine cut-out cards, of holly-wreath design, has been lithographed in four colors. Each card is illustrated with a picture of a different appliance.

A set of seven display cards similar in design to the festoon cards has been prepared by the Society for use as window and counter display cards and price cards. This set is also illustrated with pictures of different appliances and these illustrations are reinforced by sales messages. A space is left blank for imprinting the price of the different appliances pictured.

An attractive six-page illustrated gift suggestion folder, which folds to 6¼ in. x 3½ in., printed on ivory stock in three colors, can be secured from the Society for a very reasonable price. A space for imprinting the dealer's name has been left on the folder. This folder is suitable for enclosing with letters, statements, packages and for distribution to customers visiting the store.

A set of six lantern slides covering Christmas electrical merchandise and a highly colored poster stamp tying electrical appliances in with the Christmas spirit, complete the assortment of Christmas campaign material. The slogans "Make This an Electrical Christmas" and "Buy Electrical Goods at an Electric Shop" have been woven into all of the material.

In accordance with its usual practice the Society has made this material available to members and non-members alike and some 20 000 broadsides giving detailed information and prices have been mailed to the trade. The prices charged to members are the actual cost of production, while non-members can receive the sales helps at a specially low price which will enable them to obtain the material at a great saving. Copies of the broadside and price list can be obtained from the staff headquarters of The Society for Electrical Development, Inc., 522 Fifth Avenue, New York.

A SKIN A DAY

By JOE OSIER

Concede, "you can't strip two skins off one cow" but—

You can, providing you are a good workman and know your business—

Continue to strip the skins off—

Good cash customers—

Ad infinitum—and then some—if you hold up your head and tend to your tatting.

Now, I think, regardless of what Men of the Electrical Industry may say, or do or think—

To the contrary—that—

There would be more repeat orders in the electrical game if—

The boys who pay the rent, worry about overhead and keep a flock of—

Hired hands from becoming county charges, would—

Give a little more time and attention to the folks they are serving or have served.

I know talk is cheap and that it takes money to buy hamburger and that is why I am advising Men of the Trade to follow up their sales and service with—

Talk and service.

For instance: When you have completed an installation and the wampum therefrom has been distributed among the—

Bankers, jobbers, and the boys who did the heavy lifting, would it not be wise to keep in touch with that customer?

Wouldn't it be a good idea to call up that customer or his wife and inquire about the job?

See if everything is satisfactory—if the job was done neatly—if everything is working as it should work and—

A little later, providing you are rushed for time,—

Invite some one in your office—preferably "Gee Gee," the li'l office vamp,—

To get busy on the "Whezit" and make a few friends for the firm.

When I state that nothing pleases people more than personal service and personal attention—

I am not saying anything new—

I know—but—

I am mumbling a mushful and speaking with a straight tongue—and—

Taking my tip from the Wise Guy who squawked this smart crack:

"You can't catch flies with vinegar."

Sure, "you can't strip two skins off one cow" but the man who builds a home and—

His better seven-eighths who makes his decisions regarding electrical fixtures and equipment—

Has enough hides to swamp a tannery and—

It is up to you as a smart business man with a competence to accumulate—

To snag those hides for your own use—because—

If you don't—in this age of efficiency and—

Everybody's Doing It—some other Go-Getter will—and—

You will be on the outside looking in while the wintry blasts take undue liberties with—

The tattered edges of your little roundabout.

Today is the day to take advantage of your opportunities—for—

Tomorrow some competitor may be parking on the tail light of your—

Prize prospect or pet customer—

Begging him for a chance to "figger."

However, if you crave competition, let 'er ride until tomorrow or next day or next month—but—

If you are looking for clear gravy—such as Time and Material or Cost Plus—

All you can get—

Hop to't today and—

See how many skins you can tack on your walls—remembering—

A Skin a day will keep the Sheriff away.



The convenience outlet in the floor and on the table in this dining room make the use of electrical appliances a pleasure and leave the center fixture for illuminating purposes.

Increasing Convenience of Electrical Appliances

More Convenience Outlets Will Make the Use of Electrical Devices More Popular With the Housewife

By D. A. WOLFF

Even in this enlightened day when newspapers and magazines are full of discussion and praise for "the electrical home," it seems safe to say that comparatively few people have any idea how completely electricity can be made to perform the myriad household tasks that confront the average housewife each day. With a full realization of such possibilities, however, often comes the question of whether the bother of using electrical devices may not, to some extent at least, offset their accomplishments, for in order to get the full benefit from household use of electricity it is often desirable to put current to several, or possibly half a dozen uses in a single room at the same time.

The solution of this problem lies in more convenience outlets. In other

words, electricity is in a sense a servant and when sufficient outlets are not provided, it handicaps this servant just as much as it would handicap a human servant to tie one of his hands behind his back. On the other hand, if the household electrical "servant" is encouraged to do his best, through plenty of convenience outlets, properly placed, he will render more uniform and satisfactory service in every room in the house, and twenty-four hours each day if necessary, than any human servant could do.

To assure such service, however, one must have a clear mental picture of what tasks electricity is capable of performing in each room.

Electric lighting for instance should not be limited to ceiling pendants, but provision should be made for wall brack-

ets, floor lamps, reading lamps, table lamps and candle-stick lamps. The greatest comfort in a home is adequate and proper illumination. When a person comes into a room where the light is abundant and yet not glaring—where the multi-colored lamp shades present a certain tonal warmth—an indescribable restfulness is experienced which makes it a pleasure to prolong the visit.

In the kitchen, it is not enough merely to provide receptacles for lights, an iron and possibly a fan. In the electrical home one finds provision, at least in the way of convenience outlets, for complete electrical equipment. Probably the greatest labor saver in the way of such equipment is the electric range, in the best type of which the heat in the ovens can be turned on automatically at any desired time and turned off in like manner when the required temperature has been reached, thereby permitting the housewife to cook steaks, roasts, chops, pies, cakes and the like while absent from the house or when attending to other duties, with the assurance that

such foods will be prepared just right. Other labor-saving and comfort-assuring electric equipment for the modern kitchen includes the dish washer, sweeper, iron, fan, waffle iron, refrigerating machine, and a small electric motor. For polishing silverware and utensils and grinding knives a small motor will be found worth all it costs. In addition if the man of the house is the least bit mechanically inclined, he can, with a simple speed reducing device, belt such a motor to the household meat and food grinder and put it to other labor saving uses, some of which will be mentioned later in this article. All of the numerous electric devices mentioned for the kitchen are giving satisfactory service every day in thousands of homes throughout the world and if a little intelligent thought is given to providing a reasonable number of convenience outlets for their use and to placing such outlets advantageously, almost any housewife who knows, will certify that the use of the devices mentioned is a pleasure rather than a bother.

In the dining room the use at the table of the electric percolator, toaster, chafing dish and grill or toaster stove has become habitual in many homes. In fact, dining room furniture is now being made with concealed wiring for the use of such devices. In addition, the advantages of provision for use of the electric sweeper, fan and heater in the dining room are apparent. All this makes an ample number of convenience outlets in the dining room and the care in selecting their locations as important as in the kitchen.

The same is true of the living room, where is found need of floor, reading and table lamps, sweeper, fan, and electric heater.

In bedrooms and boudoir provisions must be made for lamps, curling iron, warming pad, sweeper, fan and electric heater.

Mention of the bathroom brings to mind the need of the electric water heater to heat water for shaving, for the sick room and for the many times a small quantity of hot water is needed in a hurry; also the electric sterilizer; the electric heater or reflector to dry one's hair or to radiate a welcome warmth on a chilly day; and the fan which is so necessary to every room in the house in hot weather, but doubly so in the bathroom, because it makes an easy matter of drying the hair after a shampoo. One convenience outlet for these varied uses would scarcely fit in with the modern idea of convenience and efficiency.

Even the sewing room presents a number of labor-saving uses of electricity which make a requisite number of convenience outlets desirable. First, of course, is proper provision for the sew motor, or the electric sewing machine, after which comes provision for sweeper, lamps, fan, electric heater and a light iron for pressing newly made garments.

The nursery and play room demand enough outlets to accommodate the milk bottle warmer, warming pad, water heater, sweeper, lamps, fan, electric heater and electric toys.

In the laundry provision must of course be made for the electric washing



Unsightly and inconvenient, yet a true picture of a common method of connecting electrical appliances to fixtures over the dining room table. The remedy is "convenience outlets."

equipment and the electric ironer and in the basement or cellar an electric heater will often be found desirable. Here also a small electric motor such as is recommended for use in the kitchen, will be found valuable in a dozen different ways. It can easily be arranged so that its power can be applied to turning an ice cream freezer and it is excellent for grinding tools and buffing metal articles. It can also be rigged up to serve effectively where accurate drilling of holes is necessary. In fact, unexpected uses for electricity in the lower part of the house often come up and it is the part of wisdom to have more convenience outlets there than actually seem necessary.

This thought is really so important that it deserves emphasis in connection with the entire home. Even in this apparent electrical age, the development of this wonderful force is still in its infancy and it is practically an assured fact that each year will bring forth many more household uses. And since it is evident that more convenience outlets mean more convenience in fact, it is much better to have what at present may appear too many than not to have enough.

New Advertising Idea Used by Selling Organization

The Manufacturers Representatives Company of San Francisco recently used rather a novel advertising idea. Members of the cast of an electrical act which was playing at the Orpheum Theater, were in need of an electrical washing machine and a vacuum cleaner. A. C. Maryon, manager of the company, discovered the need of these appliances and immediately offered the services of a Meadow Lark washing machine and an America Electric Cleaner. Both of these appliances appeared for a week on the stage and were seen in action by many San Francisco theatre-goers.

The Manufacturers Representatives Company has recently taken on the line of the Wise-McClung Manufacturing Company, manufacturers of the America Electric Cleaner. The San Francisco company acts as distributing agent for the manufacturers, and functions solely as a selling organization for the San Francisco district.

An electric range and cooking demonstration was recently conducted in Brigham City, Utah, by the city officials, under the direction of C. O. Roskelley.

There Is No Such Thing as "Cheap Competition"

The Plunder Merchant Should Not Interfere with the Reputable Dealer Whose Business Is Based on Quality and Service

By E. S. CONRAD

District Manager, Square D Company, San Francisco

A well established electrical contractor, who had been in that business for many years and had in the past enjoyed a clean, profitable business, recently said, "Yes, there is lots of business, but it's rotten business now." In answer to the question as to why "rotten business now," he came back with the crisp reply, "Cheap competition." Many electrical contractors have insisted that they are compelled to use cheap material of a low quality because they are up against this "cheap competition."

Think a moment, Mr. Reputable Contractor. What is this cheap competition? Is the dingy, dusty, smelly clothing shop on the back street with the shoddy clothing, the gaudy neckwear and the display of cheap overalls and cardboard suit cases decorating the front, offering any competition for the reputable clothing dealer with the store on the main street? Is the cheap shoddy merchandise sold in the one store to be compared or considered competitive to the high grade reputable lines handled by the reputable merchant? Can the rusty inferior hardware carried in the small shop on the side-street be considered competition for the reputable hardware dealer who handles equipment of the better grades? They sell entirely different classes of merchandise and service, to people of distinctly different types and desires. One sells the products of reputable manufacturers of unquestionable value and the other buys of any outlaw jobber or manufacturer who will sell at a low price regardless of the quality or the value of the product, and re-sells at a very low margin of profit to people he has never seen before and whom he will probably never see again.

Competition is Rivalry

Webster defines the word competition as "rivalry." Is there any rivalry between the reputable dealer of clothing or hardware and the fellow who "sells for less"? The man with the "Fire Sale" sign and the dummy with the faded-out suit in front of his shop is not in the same class with the man whose business policies include his commercial future and the good-will of his patrons. Why should the unscrupulous electrical merchant who uses the cheapest of shoddy electrical equipment and who sells his services entirely on price, be considered competition by the reputable electrical merchant who has a business reputation at stake and the interest and good-will of his customers at heart? Undoubtedly, this is "cheap" but the reputable electrical contractor can hardly consider this "competition."

Are you one of those contractors who in the past has enjoyed good business and are allowing yourself and your business to be switched from your safe, comfortable, substantial track of sound profitable business onto a side track of rough going, uncertain, and unprofitable business? Are you going to permit this so-called "cheap competition" to throw you off the track and head you

towards a questionable destination and an indefinite future? Are you going to direct the future course of your business over the same safe route to a clean profitable destination, or are you going to permit the wrecker of honest and sound commerce—"Mr. Cheap Competition"—to throw the switch and change the destiny of your future and the future of your business?

"Plunder-Merchandise"

Walk down the back streets of any community and you will find the glowing (?)—certainly not glowing—examples of a business built up, or perhaps built down, on cheap, inferior material and skimmed service. Go to the back streets because you will rarely find a business established or built on the policy of cheap competition situated on a main street. The success of their business as a place of "cheapness" seems to be reflected by the dinginess of their personal and commercial appearance. They are dealers in "Plunder-Merchandise."

An advertisement which recently appeared in the New York Times defines this same "Plunder-Merchandise" as the "merchandise in which quality, workmanship, service and satisfaction have been sacrificed to create fictitious 'bargains.'" It reads further:

"Plunder-Merchandising is the poisonous growth of illegitimate competition between unscrupulous dollar-chasers who have no appreciation or respect for public good and good-will.

"There is nothing but eventual disaster in Plunder-Merchandising. The manufacturer who produces it must lose ultimately and his workers must suffer. The dealer who sells it must lose event-

ually. The consumer who buys it must lose most of all.

"The profit in Plunder-Merchandise is the greatest will-o'-the-wisp that manufacturer and merchant ever pursued. Plunder-Merchandise is the falsest bargain ever foisted on an economy-seeking public.

"No reliable manufacturer, who looks to the future, will risk his good-will by producing Plunder-Merchandise, no matter what the temptation. No far-sighted merchant will betray public confidence by handling Plunder-Merchandise at any price.

"But, unfortunately, there is a class of short-sighted dealers who believe that they can continuously capitalize public gullibility. They ceaselessly hound manufacturers to skimp material, slight workmanship and adulterate quality, to cheapen the price so that the unwary may be lured to so-called 'bargains.'

"And, most unfortunately, many marrowless manufacturers are forgetting their moral obligation to the public and yielding to this false appeal for Plunder-Merchandise.

"Let us stop this Plunder-Merchandising—for the future of the industries of the country—for the good of the merchants of the country—for the protection of the people of the country.

"The public safeguard against Plunder-Merchandising is the trademark that stands for quality, service, satisfaction and fair price. The merchant's protection is in handling trade-marked goods of established reputation. The manufacturer's insurance is in maintaining the quality of his product and in informing the public what his trademark stands for in terms of service and satisfaction.

"This is the time when the four-square manufacturer of honest, fairly priced merchandise, which proudly bears his name as a guarantee, has his greatest opportunity to increase prestige and multiply sales."



To show the holding qualities of the Rawlplug a full keg of nails was suspended from one of the plugs which was screwed into a block of glass. Scales showed the exact weight suspended by the plug. The window is that of the Palace Hardware Company in San Francisco.

Who is responsible for the unstable conditions in Russia? Russia or the Russians? In Mexico was it the country itself, rich as it is in natural resources, or was it the Mexicans? You have already answered those questions. It was the Russians in Russia and the Mexicans in Mexico. If the contracting business is uncertain and unprofitable, is it the contracting business or is it the contractors? It is entirely possible for the reputable contractor to make the electrical contracting business one of the most desirable and profitable branches of the electrical industry.

Frequently contractors say, "We can't use good material or do first-class work any more. People want a cheap job." A cheap job means low grade material, poor workmanship, poor service and little satisfaction for the customer. Does your customer want a job that will not

give him service or satisfaction? If he does, and insists on that sort of work, send him around the corner to the fellow who specializes on selling "Plunder-Merchandise" and in doing poor work. This is not a job for a reputable contractor, it should go to the "cheap competition."

Good business is dependent on good customers. Good customers for the reputable contractor are forced to be good customers by the reputable contractors. If you have the courage, Mr. Reputable Contractor, to sell only equipment and appliances of unquestionable quality and value and install your work in a proper way with the interest of your trade at heart and educate your trade to insist on the better grade of work, you are on the straight smooth track to a profitable and commendable future.

Building to Suit the Requirements of the Jobber

Space Permitting Jobbing Firm to Show Dealer Best Methods of Displaying Electrical Goods Provided

Merchandising principles will be applied to the jobbing business in the new building which is being erected for the Illinois Electric Company at West San Pedro and Boyd Streets, Los Angeles. Not only has the building been planned with a view of furnishing the best facilities for warehousing, servicing and distributing electrical materials, equipment and appliances, but space has been provided for displaying the goods handled to the best possible advantage.

The new building will be four stories in height and will contain approximately 31,000 sq. ft. of floor space. It is L-shaped with one arm of the L housing the shipping department and the other the receiving department. In this manner congestion will be avoided and shipments handled in the least possible

time. It will be thoroughly up-to-date in every department.

Representing an investment in excess of \$250,000, the new building has been constructed with a view of keeping up with the future growth of the territory which the jobbing house serves. So rapid has been the growth of southern California during the past decade that the company has outgrown its present quarters. An idea of its growth can be obtained when one takes into consideration the fact that the company was organized in 1911 with four employees and at the present time has a staff of over 100.

Work on the building is being rushed in order that it may be ready for occupancy shortly after Dec. 1, 1922.

Separate departments are being pro-

vided for industrial lighting, appliances, radio and service. Each department is being arranged on the principle that an important part of modern selling practice is the proper display of the goods to be sold. One of the features of the industrial lighting department will be a display of modern industrial lighting equipment. Street lighting equipment will also be exhibited. This will afford the contractor-dealer an opportunity to bring his prospective customer for this type of equipment directly to the jobbing house where he can be shown an example of the installation.

The display quarters for appliances will be arranged with a view of giving the dealer an insight into the proper methods of displaying this type of merchandise. An attempt will be made to sell him the merchandising idea at the same time that he buys his stock of goods. Showcases, shelves and windows will be used for this purpose.

The radio department will be one of the most modern in the west. Popular interest in this recent development has resulted in an unprecedented demand for radio equipment and an extensive stock will be carried.

A completely equipped servicing department will be maintained for the convenience of those dealers who are not in a position to properly service appliances and equipment which has been sold by them. Arrangements have been made whereby the dealer may forward motors, appliances and the like, which are in need of repairs, directly to this department, where the repairs will be made on a cost basis. Sufficient stocks of parts will be carried so that every type of goods handled by the company may be repaired in the shortest possible time. No attempt will be made to take business away from the contractor-dealer who maintains a repair department of his own.

Electrical Poet Is Discovered in Vancouver Company

Electricity is usually not associated with poetry, nor would anyone expect to find a poet among the employees of a central station company. The B. C. Electric Employees' Magazine has recently discovered both. One of the employees of the company has been inspired by the utility and convenience of the electric home and has written the following words, which should be sung to the tune of "My Little Grey Home in the West."

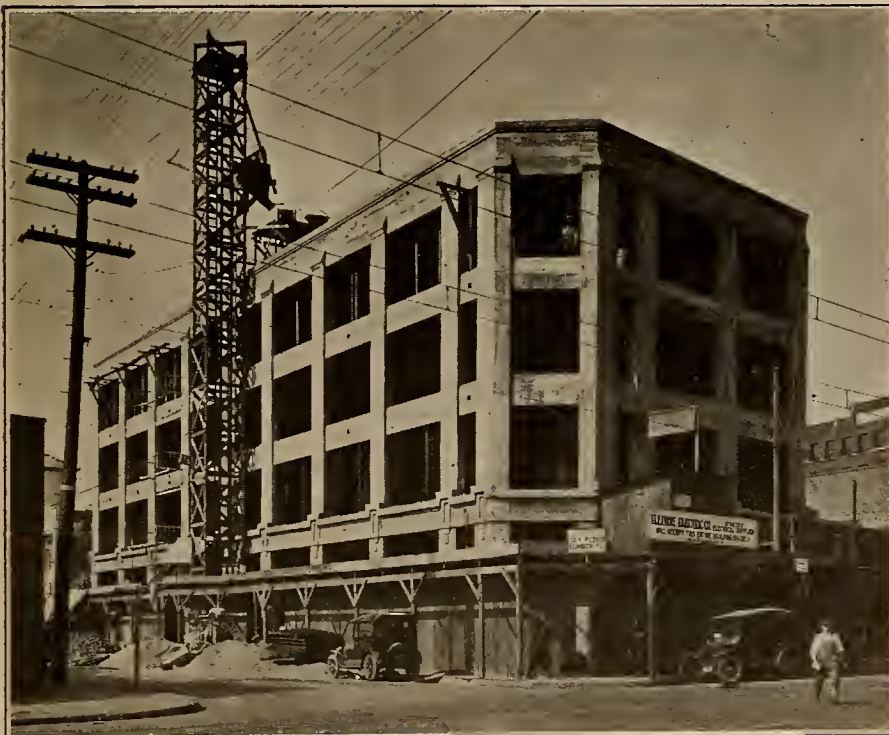
The Electrical Home in the West
Is the one that my wife would love best.
So spotlessly clean,

And work a "has been,"
In this brightly lit haven of rest.
We've no coal to carry upstairs,
No chores and no worries, no cares;
Oh, it's fine to get home
To the radiophone

In the Electrical Home in the West.

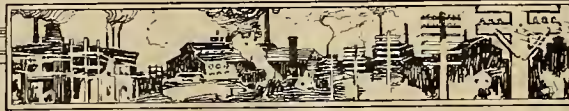
The Electrical Home in the West
Gives housekeeping pleasure and zest.
The washing's a joke,
We cook without smoke,
The dishwasher works by request.
In each room and cupboard or stair
There are outlets and lights everywhere.

Oh, it's the only life
For a man and his wife
In the Electrical Home in the West.



The building which is being erected by the Illinois Electric Company at West San Pedro and Boyd Streets, Los Angeles.

INDUSTRIAL NEWS



Water and Power Act Defeated by California Voters

Amendment 19, the California Water and Power Act which proposed to bond that state to the extent of \$500,000,000 for the development of the hydroelectric resources under the jurisdiction of a politically created commission, was overwhelmingly defeated on Nov. 7. The final vote against the measure was greater than two to one. But 12 of the 20 amendments to the state constitution met with favor from the voters.

Included in the measures which went down to defeat were the state housing act, which contained the so-called shingle provision, the measure designed to bring municipally owned utilities under the jurisdiction of the State Railroad Commission, the measure which proposed to tax municipally owned utilities, the measure to permit water development outside of the state and the amendment to place the granting of franchises in the hands of the State Railroad Commission.

The latest available returns on these various proposals follow:

	Yes	No.
No. 5—Housing Bill.....	62,876	332,806
No. 10—Taxation of Publicly Owned Utilities.....	130,906	242,525
No. 11—State Regulation of Publicly-Owned Utilities.....	169,846	293,643
No. 17—Water Development Outside State.....	144,114	186,512
No. 18—Joint Municipal Utilities.....	159,827	167,696
No. 19—Water and Power Act.....	210,906	465,163
No. 30—Street Railway Regulation.....	80,433	253,724

Expansion Is Decided Upon for Portland Power Plant

An expansion program which will call for an expenditure of about \$900,000 has been decided upon by the Northwestern Electrical Company of Portland, Ore. Herbert Fleishhacker, president of the company, recently informed Vice-President and Resident-General Manager Merwin that the expenditure had been recommended by the board of directors and that the betterment program could start in the near future.

The plans of the company include enlarging the steam generating plant at the foot of Lincoln street in Portland at a cost of about \$500,000 and the placing of \$400,000 worth of additional electric lines and equipment around the city. The expansion program has been necessitated by the growing demands for electric energy in the Oregon city.

The program adopted by the company calls for the doubling of the capacity of the steam generating plant on the water front. The plant now has a capacity of 13,000 hp. When the newly ordered additions are completed the company will have steam electric

generating plants in Portland with 31,500-hp. capacity.

According to Mr. Merwin the growth of the Northwestern Electrical Company has been phenomenal and he expects still further expansion by the company within the next two or three years. Company engineers are now investigating hydroelectric projects capable of developing as much as 50,000 hp.

The new steam plant construction will be done by local contractors on a competitive bid basis. Bids for machinery will be received at any time and bids for the other work are being invited.

Right of Los Angeles to Condemn Power Site Is Denied

In a decision handed down by the United States Circuit Court of Appeals the right of the City of Los Angeles to condemn the holdings of the Southern Sierras Power Company, in the Owens River gorge, was held not to obtain and that the right of the power company to hold possession of the site was a just one. The site in question is of large potential value and is the part of the Owens River gorge best adapted to hydroelectric development. The action of the Circuit Court of Appeals reverses the decision of the United States District Court.

The City of Los Angeles claimed that the site was a vital part of the plan of the city to develop its own light and power energy. The court held that: "The properties of the defendant (Southern Sierras Power Company) have been appropriated to the public use of other counties, municipalities, and incorporated cities and towns and their inhabitants and not for the city of Los Angeles nor its inhabitants."

The decision states that it was the intention of the law to provide that "property of a private corporation as well as property of a municipal corporation appropriated to public use in one county may not be appropriated to public use by any other county or city and county while such property is so applied and used."

The Southern Sierras Power Company serves the counties of Inyo, Mono, San Bernardino, Riverside, Imperial and the eastern section of Kern county and sixteen municipalities in southern California. It is the only company supplying Riverside county with electric energy.

The exposition committee of the Colorado Manufacturers and Merchants association of Denver, Colo., recently decided to hold the next Industrial Exposition and Prosperity Carnival the week of Feb. 5-10, in Denver's municipal auditorium.

To Draw Up Final Agreement for Use of Colorado River

A preliminary informal session was held by the Colorado River Commission on Nov. 10. Secretary of Commerce Herbert Hoover presided at the meeting, which was attended by representatives from only four states and groups of unofficial delegates.

The formal opening of the conference was held on Nov. 11. The purpose of the conference is to draw up a final agreement for the allocation and distribution of the waters of the Colorado River and its tributaries covering an area of 242,000 sq. miles.

Among the delegates present at the conference were: W. S. Corvell, of Arizona; W. F. McClure, of California; Dolph E. Carpenter, of Colorado; Stephen B. Davis, Jr., of New Mexico, and R. E. Caldwell, of Utah. Governor Campbell of Arizona and Governor Mechem of Colorado are the only two governors in attendance. George H. Maxwell, executive director of the National Reclamation Association at Washington and A. P. Davis, director of the Reclamation Service, are also in attendance.

Utah Company Is Constructing New Transmission Line

The Utah Power & Light Company is constructing a new 44,000-volt line between Menan and St. Anthony, Ida. This new line will be approximately 30 miles long. The construction is of pin type, and the length of the poles is from 45 to 60 ft., depending upon the topography of the country traversed by the line.

During the years 1919 and 1920 a new line was built from the Idaho Falls plant to Roberts, and the line from Roberts to Menan was rebuilt for 44,000-volt operation. The new line under construction from Menan to St. Anthony will replace the old line.

With the completion of this line the company will have in operation to serve this part of its territory a standard 44,000-volt line from its Grace plant on the Bear River to St. Anthony. It is the intention to rehabilitate the old line and use it for distribution purposes. In order to do this the voltage on this line will be reduced to 11,000 volts.

The British Columbia Electric Railway Company on Nov. 1 cut in its fourth generator at its Stave Lake plant. This generator, with a capacity of 8,825 kva., has been in the process of assembling for several months and will now be available for the December peak.

California Oregon Power Co. Opens Copco Plant

Second Generating Unit on Klamath River Is Started Before One Thousand Guests of Company

On Nov. 5, nearly 1,500 men and women as guests of The California Oregon Power Company witnessed the starting of the second generating unit of 12,500-kw. capacity, at the Copco plant of the company on the Klamath river in northern California. At noon the American flag was raised over the concrete dam, amid the firing of salutes and the playing of the Star Spangled Banner. Following a lunch served to all those in attendance by the young lady employees of the company the dedication ceremony was held at the plant.

John D. McKee, president of The California Oregon Power Company, presided over the ceremonies. Other speakers were: M. S. West, president of the Klamath county chamber of commerce, who spoke of the work done by the company in the development of irrigation, agriculture and industry in the communities it serves, and what the generation of power by this new unit meant to the development of the communities of southern Oregon and northern California; Judge Lutherell, superior judge of Siskiyou county; Judge Colvig, an old resident of the district; J. D. Grant, chairman of the board of directors of The California Oregon Power Company, and Addison Bennett, special writer for the Portland Oregonian. Miss Josephine Grant closed the switch which turned the water into the new turbine.

A delegation of 50 from San Francisco and 25 from the Northwest traveled by special cars to be present at the opening. In addition there were over a thousand people who came in their own machines from distances as great as 60 miles, over bad mountain roads on a cold fall day to be present at the opening ceremonies.

A few days prior to the opening of the Copco plant the new 130-mile transmission line between Springfield, Ore., and the Company's Prospect plant,

built in the record time of six months, was placed in operation. This added an extension of nearly 200 miles on the north to the interconnected transmission systems of the West, already the greatest in the world. This interconnected system now extends a distance of over 1300 miles from the Mexican border to Albany, Oregon. This new transmission line which is designed for 110,000 volts was constructed to deliver power from the system of the The California Oregon Power Company, to that of the Mountain States Power Company, which serves the upper Willamette valley in Oregon.

Mining Company Signs Contract To Buy Electric Power

Contract has been signed between the British Columbia Electric Railway Company, Vancouver, B. C., and the Britannia Mining & Smelting Company for the delivery of from 4,500 to 6,000 hp. The company will build a 34,000-volt line from North Vancouver to the mine at Britannia, 30 miles north on Howe Sound, at a cost estimated at \$150,000. Power will be delivered to a substation to be built on the Britannia property.

The Britannia mine is a low-grade copper property and is stated to be the largest in Canada. It has been operating by means of its own hydroelectric plant which generates 2,735 hp., and has been using a steam plant as auxiliary in the dry season. Owing to the anticipated increase in the power requirements as well as the low rates offered by the British Columbia Railway Company, the mining company decided to purchase power. The old hydroelectric plant will be continued in operation in order to correct the power factor and regulate the voltage.

Construction of the high-tension line will be commenced as soon as the right-of-way is obtained and power is expected to be delivered in six months. The right-

of-way will probably parallel the short line of the Pacific Great Eastern and will be available in the event of the electrification of this line which is proposed. The Britannia mine is 50 miles from the Lake Buntzen power plants of the British Columbia Railway Company.

The Britannia mill was burned down in February of 1921, and it is expected that the new mill, which has been under construction since the beginning of this year, and which will have a capacity of 2,500 tons of ore per day, being the biggest copper-ore concentrator in Canada, will be completed at the end of this year, and will be put into operation at the beginning of the new year. The Britannia company will build its own substation, to which the British Columbia Electric Company will deliver the power.

Permits and Applications for Water Are Announced

Forty-six applications for permits to appropriate water in the state of California, for power and irrigation purposes, were filed with the State Department of Public Works, Division of Water Rights, during October, according to a report recently issued by that body. Most of these applications call for only minor quantities of water.

Two applications filed by W. H. Phillips, Mills Building, San Francisco, request permission for 4,000 sec.-ft. and 2,900,000 acre-feet from the Sacramento River and tributaries in Shasta County, for power and irrigation purposes. The estimated cost of the development is \$40,000,000. The irrigation projected is to cover 1,200,000 acres and it is proposed to develop 200,000 hp.

During September, thirty-two permits were issued by the Division of Water Rights for the appropriation of water in the state. The permits allow water usage for small power, irrigation and mining projects. The Yuba Development Company, Hobart Building, San Francisco, was granted a permit covering the use of 700 sec.-ft. and 5,000 acre-feet per year, from the North Yuba River. The permit allows the use of this water for power purposes and the company plans to develop 19,886 hp. The estimated cost is \$1,500,000.

Two licenses to appropriate water were also issued by the division during September. One of these is for irrigation purposes and the other license permits use of water for domestic use.

Seattle Will Be Decorated for the Christmas Holidays

With the object of making Seattle's Christmas season decorations unusually distinctive, the retail trade department of the Chamber of Commerce has announced that a novel embellishment of the whole business district will be undertaken. Miles of strings of cedar rope will be hung between the lamp posts with adornments at intervals of cedar, fir and holly wreaths. There will be a 10-ft. Christmas tree on every lamp post, and from eight to ten huge wreaths will be strung across the street in each block.

The decorations will be in place Nov. 25 and remain until after the Christmas holidays. Seattle merchants expect a larger Christmas trade this year than has been experienced for some years.



The crowd gathered to watch the opening of the Copco plant of The California Oregon Power Company on Nov. 5

Events in Washington of Interest to Western Men

A Survey of Recent Developments in the Nation's Capital by
Paul Wooton, Special Correspondent of the Journal
of Electricity and Western Industry

Policies of the Federal Power Commission are now well developed in such matters as accounting, depreciation and the handling of permits and licenses. The only duty imposed on the commission by the Water Power Act on which little progress has been made is that pertaining to the valuation of properties.

With the idea of determining the practical difficulties of making an evaluation, the commission undertook to value the properties of the Niagara Falls Power Company. Before its accountants had proceeded far with that work, controverted points began to arise with the accountants of the company. It was soon apparent that the work could not proceed until details of policy had been worked out. It is understood that the commission has suspended its evaluation work at that plant. The whole question of a valuation policy is expected to come up at the next meeting of the commission, at which time it probably will be decided whether to attempt to proceed under present conditions or to await appropriations and authority which will permit the commission to employ, for its own account, properly qualified men to carry forward that work.

The Bend Water, Light & Power Company, of Bend, Ore., has appealed to the Federal Power Commission to set aside the preliminary permit recently granted the Columbia Valley Power Company, for two projects on the Deschutes River. The Bend company bases its contention on the ground that it is in a position, with its established system of distribution, to make better use of the power. The commission, on the other hand, does not look with great favor, it is believed, on the proposal. The preliminary permit was not authorized until full hearings had been conducted and negotiations had extended over two years. The feeling is that the Bend company should have made up its mind to develop this property during that period, rather than wait until two weeks after a permit for the other company had been authorized.

At the same time the commission is particularly anxious to issue permits to those who can make the best use of the power and to those who are certain to go ahead with the development. Action in this unusual case is expected at the next meeting of the power commission.

The Bend Company plans to use the power during the irrigation season for raising water from the 600-ft. gorge of the river to the farming lands above. During the months that irrigation pumping will not be required, it expects to dispose of a part of that load on its existing system in central Oregon, where an effort will be made to make the rate sufficiently low to develop a large additional heating and industrial load.

Wages paid at all navy yards and naval stations are now being reviewed by the Navy Wage Board sitting in Washington. Machinists, constituting the largest single group of employees, are asking for increases somewhat in excess of the wage paid in private machine shops.

The law provides that "the rates of pay of the employees in the navy yards shall conform, as nearly as is consistent with the public interest, with those of private establishments in the immediate vicinity of the respective yards."

The machinists contend, however, that the clause "as nearly as is consistent with the public interest" gives the board authority to exceed the private wage to some extent when it is in the public interest. They contend that the depression in the machine shop activity has forced down the scale of wages to the point where American standards of living can not be maintained by the employees. On the other hand, the machinists contend that the great reductions in the forces at the navy yard have resulted in the weeding out of the less efficient until the existing staffs of machinists and other trained employees are in effect picked men. They are entitled, they declare, to a higher rate than is paid the average employee in private establishments.

The War Minerals Relief Commission is recommending a large number of small awards on the chrome claims in the West. None of the large recent awards have been on western claims, with the exception of that of Bart Finning, of Forest Hill, Calif., who was awarded \$16,565.56. Most of the awards on chrome claims are for less than \$1,000.

The intermountain states are planning two legislative fights which will be staged with the reconvening of Congress. They want a bonus on gold and

they want an amendment to the Interstate Commerce act, which will allow them to enjoy railroad rates that are comparable to those charged to and from the western ports. At the annual convention of the National Rivers and Harbors Congress, which will be held in Washington Dec. 6 and 7, the principal discussion is to be around the long and short-haul clause of the act to regulate commerce.

Power Company to Sell Current to West Vancouver

A development taking place in Vancouver, B. C., is the passing of a by-law in the municipality of West Vancouver, contracting for electric light and power service with the British Columbia Electric Company. Some 600 customers are to be served, the rate being 7 cents a kw-hr. with a minimum charge of \$1 a month. Street lighting will be charged for at the rate of \$45 a year.

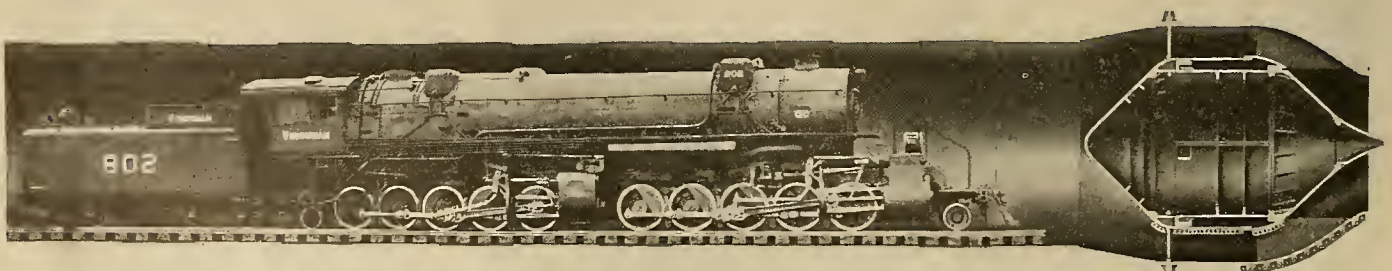
The Britannia high tension line will be tapped for the West Vancouver service, stepping down to 11,000 volts and 2,300 volts. The distribution lines will be constructed by contract and will cost \$35,000, it is estimated. The agreement calls for the delivery of current to begin within 90 days.

Large Dam and Reservoir Is Being Built in Idaho

The largest construction job now under way in the intermountain country is being carried out near Carey, Ida. This is the construction of the dam and reservoir, with its accompanying canal systems of the Carey Valley Reservoir Company. Heber Q. Hale, of Boise, Ida., is manager of the company and in active charge of the project.

When completed the reservoir will have a capacity of 13,500 acre-feet, with the construction such that an additional unit can be added to bring the ultimate capacity up to 18,000 acre-feet. The job is costing \$500,000 and the work is being done by the Atlas Development Company of Salt Lake City.

The Bend Water Light & Power Company, of Salem, Ore., has applied to State Engineer Copper, through T. H. Foley, for permission to divert 5,000 sec.-ft. of water from the Deschutes River for general commercial power purposes; construction to include a power house, penstocks, turbines and generators and a dam of concrete, 270 ft. high, 860 ft. long at the top and 120 ft. long at the bottom; 106,000 hp. to be developed. The engineer in charge is V. H. Reineking, Spaulding Building, Portland, Ore.



The relative size of one of the three penstocks and Johnson valves to be used by the Niagara Falls Power Company and one of the largest locomotives operated by the Virginia Railway Company may be secured from the artist's conception of both drawn to scale. The penstocks and valves

will supply the three 70,000-hp. turbines to be installed in the plant of the power company on the American side of the Niagara River. The valves and turbines were built by the I. P. Morris department of the William Cramp & Sons Ship & Engine Building Company.

One Million Watt Vacuum Tube Is Largest in World

A vacuum tube of 1,000-kw. capacity, the largest one ever made, has just been developed by the Research Laboratories of the General Electric Company. This tube is fifty times larger than any that has been made heretofore. The weight of the new device is only 60 lb. and yet it would light 40,000 25-watt lamps or supply energy to almost 1,500 average homes. The filament is a rod of tungsten and if it were drawn out into filament of the size used in the ordinary lamp, it would reach a distance of 50 miles. The light given off during the operation of the tube would be about 40,000 cp.

The tube was proposed by Dr. A. W. Hull and is called by him the magnetron. It consists essentially of a water-cooled cylindrical anode 30 in. long and 1 3/4 in. in diameter. In the axis of the anode is a tungsten filament

production of tubes of higher efficiency as well as tubes of larger output. The progress in this direction is more difficult and is apt to be slower than in the direction which has thus far seemed more important.

California Industries Exposition Aid to Electrical Men

When the California Industries Exposition closed on the evening of Oct. 28, exhibitors were unanimous in their statement that it had been one of the most successful that has been conducted in San Francisco. In the Civic Auditorium, where the exposition was held, were exhibits from about two hundred individuals, firms, associations and chambers of commerce. Nearly as many industries and products were represented.

Daily entertainment and special days during the three-week period that the exposition was open helped to attract

uum cleaners, washing machines, electric ranges and other appliances by several San Francisco and Oakland dealers.

The "Before and After" idea played a strong part in the displays of the electrical industry. Several booths showed how housework was done without electrical appliances and adjoining these were displayed modern methods of doing the same work by means of electrical labor-savers.

Prospective buyers were many, and electrical men were kept busy at all times during the exposition answering questions concerning the products they handled. Reports from most of the firms exhibiting electrical equipment indicate the general opinion that the exposition was well worth the time and effort spent in arranging it.

The list of electrical exhibitors and their exhibits included the following:

Agate Manufacturing Company, electric time recorders.
Atlantic-Pacific Radio Supplies Company, radio sets.
I. S. Cohen & Sons, vacuum cleaners and electrical supplies.
California Ice Machine Company, ice machinery.
De Jongh & Cochran, electric ice machines.
Great Western Power Company, central station exhibit.
Mazda Lamp Works Division of General Electric Company, Mazda lamps.
Johnson Electric Washing Machine Company, electric washing machines.
Majestic Electric Development Company, electric heaters, water heaters and waffle irons.
Pacific Gas & Electric Company, electric ranges, model of Pit River No. 1 plant.
Scheeline Manufacturing Company, electric heaters.
Schleuter's Inc., household appliances including washing machines, electric ironers, and vacuum cleaners.
Stamp Electric Hoist Company, electric hoists.
Wells Manufacturing Company, electric waffle irons.
Westgate Metal Products Company, electric cookers.

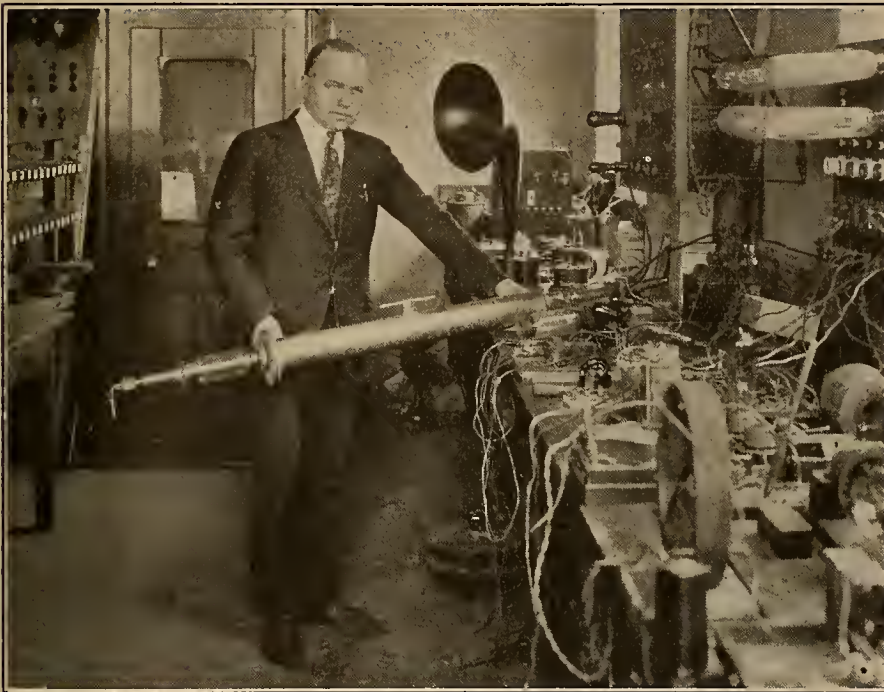
Heavy Appliance Display to Be Held in San Francisco

An exhibition and demonstration of heavy duty electrical appliances is to be conducted in San Francisco, by the Edison Electric Appliance Company and the Nathan-Dohrmann Company from Nov. 20 to Dec. 2. During the display of the appliances, which are particularly adaptable to use in hotels, restaurants, bakeries and other establishments needing large electrical equipment, practical use will be made of the appliances demonstrated.

Special invitations have been sent out to all hotel, restaurant, and bakery managers north of the Tehachapi Mountains and up to the Oregon line, and to those of western Nevada. In addition to these specially invited guests the exhibition will be open to the public.

The power companies of California are cooperating with the manufacturer and the dealer in the appliance demonstration. The first floor of the Nathan-Dohrmann building will be used by the exhibitors during the display.

New capital to the amount of nearly \$2,000,000 has been raised through the sale of securities by the Multnomah Lumber and Box Company. A portion of the funds has already been used in the purchase of the Yakima Northern Railway and a tract of 600,000,000 ft. of standing timber in Lincoln county. The company plans to complete its big mill at Rainier, Ore., starting the work at once.



The 1,000-kw. vacuum tube

.4 in. in diameter and 22 in. long. This filament is excited by current of 1,800 amp. at 10,000 cycles, the filament excitation requiring about 20 kw. The magnetic field is produced by this large heating current from the cathode to the anode during a portion of each half cycle of the current passing through the cathode, this action taking the place of that of the grid in the three-electrode tube. The electron current to the cathode is thus interrupted 20,000 times per second. By the use of properly tuned circuits this can be used for the production of high frequency power for radio or any other purpose. This particular type will supply 1,000 kw. of 20,000-cycle power at an efficiency of 70 per cent, operating with an anode voltage of 20,000 volts d.c.

For radio purposes efficiencies of 70 and 80 per cent are eminently satisfactory, but for other engineering purposes they are not as high as would be generally desired. Another line of development is therefore in progress, viz., the

the people of San Francisco and the San Francisco bay region numbering thousands daily. A small admission price of twenty-five cents was charged, thus inducing a large number of persons to visit the exposition who would otherwise have been kept away.

All of the products exhibited were either of California manufacture or those which were particularly adaptable to the needs of residents of the state. During the exposition demonstrations of the products displayed were presented by the exhibitors. In this way a great deal of educational advertising was imparted to the visitors.

From the point of view of the electrical industry the exposition was of particular advantage. Electrical dealers, jobbers, sales agents, manufacturers and power companies were among the leading exhibitors. Booths of these companies varied from a display of a model of the new Pit No. 1 power plant of the Pacific Gas & Electric Company to demonstrations of vac-

Meetings

San Francisco Electrical League Holds Pioneers' Day

Pioneers' Day at the San Francisco Electric Development League's weekly luncheon was held on Oct. 30. At this time honorary memberships were conferred upon John Martin, Eugene De Sabla and H. H. Noble. The first two put in the Rome or Nevada power house on the South Yuba River.

George Baldwin of the Pacific Gas & Electric Company gave the Road Show of the Pacific Service in abbreviated form. His lecture was illustrated by a map of California fitted with small electric globes which were lighted as his talk progressed. As each new power house was mentioned a green light indicated the location and yellow lights showed the route of the power line connecting the generating units with consuming points. His talk covered activities of the Pacific Gas & Electric Company from the construction of the Folsom plant in 1895 to the opening of Pit River No. 1 plant. Views of the power plants of the system were shown including the Electra plant which in 1903 supplied the first hydroelectric power to reach San Francisco.

At the speakers' table there were seated a number of "Old Timers" including: A. G. Wishon, W. S. Hager, F. M. Ray, Samuel Taylor, John A. Britton, H. H. Noble, John Martin, Professor Harris J. Ryan, Professor C. L. Corey, Wynn Meredith, A. H. Babcock.

President Balzari turned the meeting over to John A. Britton who paid high tribute to the activities of the men he introduced as "Old Timers," and after speeches by two of the men he presented John Martin, Eugene De Sabla, and H. H. Noble with certificates of honorary membership in the league. Mr. Martin gave a short talk on the work that he and Mr. De Sabla did in the nineties on the Yuba River, principally on the Colgate plant of the Pacific Gas & Electric Company. He then called the attention of the meeting to the death on Oct. 15 of John F. Kelly,

one of the leaders in the development of electric energy, and a member of the firm of Stanley, Kelly and Chesney. Robert Sibley made a motion that was seconded and passed that there should be a committee of three appointed to draw up a resolution expressing the regret and sorrow felt by the league on learning of the death of Mr. Kelly.

The meeting was brought to a close after demonstration of the activities of high voltage electricity and Geissler tubes.

Christmas Plans Made by Denver Electrical Interests

The electrical interests of Denver, Colo., through the Electrical Cooperative League of that city, will launch a Christmas Merchandising Campaign early in December, based upon the successful campaign of last year.

The slogan "Make This an Electrical Christmas" which has been effectively used during past holiday seasons will again be featured. Posters, stickers, gift certificates and other material will be supplied to members of the League. Cooperative advertising is being encouraged by the League to tie-in with a general campaign which will reach its climax during the week of December 11-16, when special window displays will be prepared by all dealers and jobbers. In addition to supervision of adver-

tising and sales-helps, additional energy will be devoted to intensive personal work on the part of field men who will assist in getting the message over to the various dealers that window displays are a very necessary part of a retail selling campaign, and that well-planned and attractively arranged window displays are the connecting link between the advertising and the goods to be sold.

Purchasing Agents' Day Held by San Diego Electric Club

Purchasing Agents' Day was observed by the Electric Club of San Diego on Oct. 31. A large crowd of purchasing agents was present at the meeting and was addressed by George Holmes. C. C. May acted as chairman of the meeting which was held at the Waldorf.

It has been the policy of the San Diego club to have these special days which have proved very satisfactory in the past. The main object of the special meetings is to obtain closer contact with the men outside of the electrical industry.

Will Try to Increase Number of Electrified Homes

The advisory committee of the California Electrical Cooperative Campaign at its meeting in San Francisco on Nov. 10 decided to double its efforts in the year 1923 toward electrification of the home. Data furnished by the State Housing Commission was shown to indicate a present building record of 30,000 new homes in California for the year 1923. The campaign will be directed toward the building of ten model electric homes situated in strategic cities of California and effort will be made to reach one-tenth of the entire population of the state, particularly that portion interested in home building.

Central stations of the state are interested in the proposed drive for it is conservatively estimated that with proper education these new homes may be induced to increase their use of electric energy from the average 250 kw-hr. per year to somewhere between 2,000 and 3,000 kw-hr. per year.

COMING EVENTS

ELECTRICAL SUPPLY JOBBERS' ASSOCIATION —

Annual Convention—Cleveland, Ohio—
Nov. 20-24, 1922.

PACIFIC DIVISION, NATIONAL ELECTRICAL SUPPLY JOBBERS' ASSOCIATION —

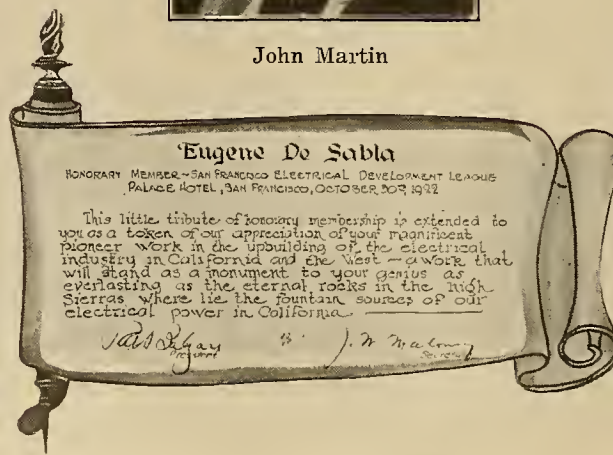
Quarterly Meeting—Hotel Coronado—
Dec. 7-9, 1922.



H. H. Noble



John Martin



Eugene De Sabla

To the manufacturer, jobber and contractor-dealer the campaign is also of interest in that it is thought reasonable to expect the average wiring and electrical equipment of the new home may be raised from its former average in California of \$250 to \$500, thus making possible an additional market of electrical merchandise for the year 1923 of \$7,500,000.

Los Angeles Club Hold "Spooky Hallowe'en" Meeting

A large turnout graced the "Spooky Hallowe'en Meeting" of the Electric Club of Los Angeles on Oct. 30. Advance publicity through the columns of "Sparks," the club's program announcement booklet, notified the members of the organization of the novel features to be presented to those in attendance.

The program that was presented was as follows:

'HALLOWE'EN SPIRITS'

II Ghostly, Hair-raising Acts

and

Sneaky, Shifting, Enchanted Scenes

- I. B-WITCHING COMMUNITY SINGING
"Chief Sneak" Ransoom and Little Sprites
- II. "ON THE AIR"—K. K. K. (Sounds Spooky)
"Goblin" Bishop and "Beagle" Smith
- III. MYSTIFYING, MYSTICAL, MYSTERIOUS SPIRITS
"Grand Exalted Witch" Airey and Company
- IV. GHOST STORIES (Hope they Walk)
"Great Spirit" Yates
- V. IN 1999
"Goblin" Hoopes, "Spook" Sarles, "Spirit" Hettlinger
- VI. WITCH FORTUNE TELLER
"Chief Sorcerer" Sherman
- VII. SOME SPIRITS (Evil or Malt)
"Imperial Gnome" Allen
- VIII. 20TH CENTURY RACE—WITH PARIMUTUALS
"Ful-O'-Spirit Whiskaway" Jones
- IX. SPIRITED PIE-EATING CONTEST
"Great White Spooks," "What's a Mat" Tony and Pietro
"Big Black Goblin" Mose
- X. ANIMATED AQUATIC APPLE HUNT
By the Departed Spirits
- XI. SPIRITUAL MUSIC TRANSFORMED
By Edison Company's Witches, Spooks and Goblins.

New Association Is Formed by Pueblo Electrical Men

The first meeting of the Pueblo Electrical Contractors and Dealers Association was held in the Commerce Club and at that time the officers of the association for the year were elected. Harry Ashcraft was elected president and E. F. Stone, superintendent of light and power for the Southern Colorado Light & Power Company was selected to hold the position of secretary and treasurer for the new organization.

The association is composed of electrical contractors and dealers of Pueblo and the immediate vicinity. One of the purposes of the club is to secure greater cooperation between dealers and the power company. It is the intention of the association to conduct electrical educational campaigns in order that a better grade of wiring may be installed in the territory covered by the association. Merchandising of electrical appliances will also be discussed by the members at future meetings.

At the first meeting Robert Kyle of the Kyle Electric Company spoke on the merchandising of electrical appliances. William Quandt, superintendent of the meter department of the Southern Colorado Light & Power Company

discussed meter installations and electric service. Methods of providing better service, and means for securing cooperation between the dealers and the power company were the topics covered by a talk given by E. F. Stone of the Southern Colorado Light & Power Company.

Vancouver Christmas Campaign Preparations Completed

The Christmas Merchandising Campaign of the Electrical Service League of British Columbia will be much more elaborate than any attempted before, according to Rey E. Chatfield, secretary of the League.

Beginning the first of December, billboards scattered over Vancouver will carry the message,—

**ELECTRIFY
BUY HER SOMETHING
ELECTRICAL FOR CHRISTMAS**

The Electrical Dealers of Vancouver

These posters are most attractive. In five colors is depicted a Christmas scene—an electrically equipped dining table placed at a window looking out into the snow. This billboard poster is one of a series of six, each to run for one month, all carrying the message, "Electrify." The British Columbia Electric Railway Company is financing this campaign, which, however, is put out under the auspices of the electrical dealers of Vancouver.

In addition, for one month preceding Christmas, a small three-inch advertisement will appear daily in the newspapers which will be merely the slogan, "Electrify—Give Electrical Gifts." Line cuts of this slogan will be furnished all electrical firms advertising and will be used by them in all their own advertising in newspapers and street cars.

Small gum stickers in colors will be sold to all firms in the industry for pasting on letters and bills, as well as a sticker of larger size for pasting on wrapped parcels. The stickers carry the same message—"Electrify—Give Electrical Gifts"—that will appear in all the advertising in newspapers, billboards and street cars.

Just prior to Christmas week and during the week, large cooperative advertisements will appear in all the newspapers. These advertisements will carry the same message, "Electrify—Give Electrical Gifts." However, specific suggestions for Christmas gifts with appropriate cuts will be used.

This cooperative part of the campaign will be financed by the power company, manufacturers, jobbers and contractor-dealers, and the names of the cooperating firms will appear with each advertisement.

Window streamers bearing the slogans, in two colors, will also be used the last two weeks of the campaign. The entire scheme will be self-supporting and no part of the expense will be borne by the Electrical Service League of British Columbia. The Christmas campaign conducted last season by the Service League was productive of good results and it is believed that with an added impetus given the electric idea by the electric home just closed, the trade will enjoy a very successful holiday business.

Tenth Anniversary Celebrated by S. F. Engineers' Club

The San Francisco Engineers' Club celebrated its tenth anniversary on Oct. 31 with a luncheon at which nine of the ten past presidents were present and the tenth, W. W. Briggs of the Westinghouse Lamp Company, spoke to the meeting from his office in New York by means of the transcontinental telephone.

Seven other members of the San Francisco Engineers' Club were gathered in Mr. Briggs' office in New York for the occasion and for a period of fifteen minutes during the luncheon there was an exchange of greetings between members in New York and San Francisco. The other members in Mr. Briggs' office were: Allen Hazen, A. M. Hunt, F. W. Gay, Guy Bayley, J. G. De Remer, C. C. Broadwater, A. H. Griswold. The use of the telephone line was made possible through the courtesy of A. H. Griswold, assistant vice-president, American Telephone and Telegraph Company.

After concluding the telephone conversation, each of the several past presidents made brief talks and the meeting then listened to an address on "What Shall We Do With Our Past Presidents?" by George L. Dillman. New officers of the club, recently elected for the year, beginning Nov. 1 are: President, W. G. Vincent, Jr., vice-presidents, F. L. Sizer and Bruce Lloyd, Secretary, C. H. Snyder.

Electrical Engineers Schedule Meetings for Next Year

As announced about a year ago, the board of directors of the American Institute of Electrical Engineers, at a meeting held in August 1921, adopted the policy of holding four general meetings of the Institute each year, all other meetings to be under the auspices of the various sections.

In accordance with this policy there have been four general meetings of the Institute held during the year 1922; and the following four general meetings have been scheduled for the year 1923: Midwinter Convention, New York, Feb. 14-16; Spring Convention, Pittsburgh, in April; Annual Convention, Swampscott, Mass., June 25-29; Pacific Coast Convention, San Francisco, in September.

Denver Radio Jobbers Unite to Form New Association

Radio jobbers of Denver, Colo., have recently formed the Radio Jobbers' Association, Intermountain division. The new organization plans to affiliate with the National Association of Radio Jobbers.

Jack L. Hursch was elected chairman of the association and Oriel Sibbald was named secretary. At the Denver meeting the following men were present representing their firms: Dr. William D. Reynolds and Jack L. Hursch of the Reynolds Radio Company, Paul Lanis and Orval Peterson of the Rocky Mountain Radio Corporation, J. C. Davidson and A. F. Grossman of the Hendrie & Bolthoff Manufacturing & Supply Company, Thomas Yonley and Louis Grove of the Mine & Smelter Supply Company and B. G. Vreeland of the Winner Radio Corporation.

Personals

D. E. Shroyer has just recently joined the sales organization of the Westinghouse Electric & Manufacturing Company and is located in the transportation division of the Los Angeles office. Mr. Shroyer is a graduate of Tri-State College of Engineering and was with the General Electric Company for one year, Pennsylvania Railroad for two years, and was with the railway department of the Westinghouse Electric & Manufacturing Company at East Pittsburgh for the past six years.

H. W. Coombs, Bryan-Marsh Division, Chicago, spent two weeks during the Electrical Exposition in Salt Lake City assisting Stevens Sales Company, jobbers of the Bryan-Marsh Lamp Company.

Gaskell S. Jacobs, prominent San Francisco engineer, has been appointed consulting engineer for the San Joaquin Light & Power Corporation and subsidiary companies, with headquarters in Fresno. Mr. Jacobs enters this work after thirteen years of public utility work with various California companies and a long experience on the staff of the California State Railroad Commission, and independent consulting work. The appointment became effective Oct. 15, 1922. Graduating from the University of California in 1909, Mr. Jacobs was engaged as engineer on the staff of the People's Water Company of Oakland, now known as the East Bay Water Company. In 1911 he was employed by the J. G. White Engineering Corporation for valuation work, with headquarters at San Francisco. The following year he was with the Great Western Power Company in the northwestern division, and in 1913 he joined with C. L. Cory of Berkeley in rate and valuation work. The next year Mr.



GASKELL S. JACOBS

Jacobs was engaged in special work for the Pacific Gas & Electric Company, and from 1915 to 1921 he was on the staff of the California State Railroad Commission in its gas and electric department. For the past year and a half Mr. Jacobs has been associated with F. Emerson Hoar in special investigations in rate valuations and project development.

N. W. Graham, president and part owner of the Graham-Reynolds Electric Company, Los Angeles, has just returned from a business trip East where he visited a number of factories and reports that the outlook for the fall and winter business is exceptionally encouraging.

A. E. Carter, Eureka Vacuum Cleaner Company, of Salt Lake City, Utah, recently completed a ten-day business trip throughout Idaho.

E. A. Evans, branch manager, Westinghouse Lamp Company, Salt Lake City, attended a convention of branch managers and salesmen of the Westinghouse Lamp Company at San Francisco recently, and is now on a two weeks' business trip to Montana.

R. W. Murphy, Pacific Coast manager, Westinghouse Lamp Company, was a recent Salt Lake City visitor.

A. M. Jackson, Salt Lake City, left for an extended business trip in the East, on Oct. 30 in the interests of the Locke Insulator Corporation which recently increased the territory placed under his supervision. During this trip Mr. Jackson expects to visit Kansas City and Omaha, both of which are included in his new territory.

E. H. Eardley, Eardley Electric Company, of Salt Lake City, Utah, has returned from Cincinnati, Ohio, where he attended the annual convention of the National Association of Electric Contractors and Dealers. He reports that the name of the association has been changed from the National Association of Electrical Contractors and Dealers to the "Electragist International." The Electrical Contractors & Dealers Journal has been changed from that title to the "National Electragist."

E. B. Ball, commercial manager of the Western Light & Power Company, who won fourth prize in the recent summer business contest promoted by Electrical Merchandising, also qualified for prizes from the Westinghouse company and H. L. Doherty & Company, the parent organization of his company.

Among the out-of-town visitors to the Rocky Mountain Electrical Exposition were: Carl Martin, Benjamin Electric Co., Seattle; J. W. Orr and W. P. Baker, Idaho Power Company, Boise; Don Brown, Idaho Power Company, Pocatello; E. F. Stone, Southern Colorado Power Company, Pueblo, Colo.; J. L. Busey, Butte Electric Supply Company, Butte, Mont.; L. A. Herdti and R. S. Folland, Ogden Electric Supply Company, Ogden. The following representatives were in attendance at the Electrical Exposition: John Rocke, Meadows Manufacturing Company, Bloomington, Ill.; P. W. McCauley, Russell Electric Company, Chicago, Ill.; Fred D. Harvey, Landers, Frary & Clark, San Francisco, Calif.; B. M. Gould, The Maytag Company, Newton, Iowa; R. M. Allyn, Altorfer Brothers Company, Peoria, Ill.; J. S. Veatch, Ohio Brass Company, Denver, Colo.; B. C. Rockwell, The King Manufacturing Company, St. Joseph, Mo.; L. E. Hoagland, Century Electric Company, St. Louis, Mo.; C. M. Brown, Woodrow Manufacturing Company, Newton, Iowa; G. K. Leis, Electric Vacuum Cleaner Company, Cleveland, Ohio.

Prudence Penny (Mrs. B. R. Charles), director of the home economics section of the Los Angeles Examiner, is leaving for New York City where she will aid in the establishment of a home economics section in one of the New York papers and supervise the exhibition of an electric bungalow. Prudence Penny has been the foremost advocate of the electric home idea in southern California.



"PRUDENCE PENNY"

For the past three and a half years she has devoted a column a week in the home economics section of the Examiner to a discussion of electrical household servants. She has also written many stories regarding the electric home exhibits in southern California. In 1919 she predicted that in ten years the homes in that district would be heated and cooled, refrigerated, washed, ironed and swept by electricity. Her department guarantees that every appliance discussed is "home tested." Prudence Penny is assisted by Mrs. Norma Kunkel and Miss Adele Bosworth in her work of furthering the use of electrical appliances in the home.

L. R. Ardouin, formerly of the U. S. Steel Products Company in San Francisco, has just recently moved to Los Angeles and is now employed in the local office of that company.

K. E. Van Kuran, P. H. Booth, W. L. Frost of Los Angeles, and George Bigelow of Riverside, members of the Advisory Committee of the California Electrical Cooperative Campaign, have just returned from San Francisco, where they attended the Advisory Committee meeting of the Campaign.

W. M. Carpenter, president of the American Cross Arm and Conduit Company of Chicago, recently visited Los Angeles and the Western Electric Company local agents of his company.

P. H. Evans, radio engineer of the engineering department, Western Electric Company, New York, has been in Los Angeles assisting with the new broadcasting station which his company recently installed for the Los Angeles Times.

A. S. Moody, assistant manager of the Portland office of the General Electric Company, is making an extended trip to eastern business centers. Mr. Moody will visit several of the General Electric factories before returning to the Pacific Coast.

Clare N. Stannard, vice-president and general manager of the Denver Gas & Electric Light Company, and A. H. Seep, vice-president of the Mine & Smelter Supply Company, have been appointed members of the municipal aviation council by Mayor Dewey C. Bailey of Denver.

J. Frank Dostal, general manager of the Colorado Springs Light, Heat & Power Company and president of the Rocky Mountain division of the N. E. L. A., and C. A. Semrad, vice-president and general manager of the Western Light & Power Company with headquarters at Boulder, have been appointed directors of the Colorado Businessmen's Association, an organization intended to repel the introduction of radical policies in the fall political campaign.

L. A. Hobbs, recently appointed Los Angeles district manager of the Brascolite Company, has been in San Francisco and northern California for the past few weeks in the interests of his company.

C. H. Paulin, industrial salesman of the Westinghouse Electric & Manufacturing Company, has just returned to Los Angeles from a visit to San Francisco looking after government contracts for his company.

Harry P. Cramer, assistant to the superintendent of the light and power department of the Portland Railway Light & Power Company, has been appointed editorial representative in the Portland district for the Journal of Electricity and Western Industry and the Electrical World. He assumed his new duties on Sept. 1. Mr. Cramer obtained his early training at Stanford University, where he studied under Professor Harris J. Ryan, and was graduated in 1910. After two years with the testing department of the General Electric Company at San Francisco he returned to his home in Portland to be-



HARRY P. CRAMER

come a sales engineer in the Portland office of the General Electric Company, where for eight years his time was chiefly devoted to the selling of motors and larger apparatus. Two years ago Mr. Cramer entered the employ of the Portland Railway Light & Power Company as assistant engineer and has since been advanced to the position he now holds.

George A. Gray, manufacturer's representative of San Francisco, has left for eastern business centers via Portland, Seattle and Spokane. While in the East he will visit Chicago, New York and Boston and attend the forthcoming convention of the National Electric Supply Jobbers' Association at Cleveland, Ohio.

Edward N. Hurley and Neil W. Hurley, of the Hurley Machine Company, manufacturers of the Thor washing machine, are touring the Pacific Coast, preparatory to opening permanent offices in San Francisco. Both have expressed themselves as being favorably impressed with the excellent merchandising opportunities of the markets of the West.

L. A. S. Wood, illuminating engineer of the Westinghouse Electric & Manufacturing Company, has been touring the West in the interests of the Geo. Cutter Company which is owned by the Westinghouse Company and is located at South Bend, Indiana. Mr. Wood reports that his company is bringing out some new developments that will place the Cutter line in a very advantageous position.

Arthur P. Davis, director of the United States Reclamation Service, inspected the Pit River development of the Pacific Gas & Electric Company, before going to Santa Fe, N. M., to attend the meeting of the Colorado River Commission on Nov. 11. Mr. Davis was shown over the project by O. W. Petersen, construction engineer for the company, who was formerly employed by the Reclamation Service.

W. S. Murray, consulting engineer of New York City, who has been visiting in the West for the past several weeks, has returned to his eastern headquarters. He made the trip over the electrified lines of the Chicago, Milwaukee & St. Paul Railroad.

H. E. Sanderson, Pacific Coast manager, Bryant Electric Company; W. M. Deming, president and general manager, Atlantic Pacific Radio Supplies Company; C. R. Bach, Pacific Coast manager, Manhattan Electric Supply Company; F. N. Averill, president, Fobes Supply Company; C. M. Will, Portland manager, Fobes Supply Company; Guy Littler, president, West Coast Engineering Company; O. B. Stubbs, president, Stubbs Electric Company; and S. W. Peterson, general manager, Stubbs Electric Company, have recently returned from a three weeks' trip by boat, 175 miles down the Salmon River in Idaho. A shooting and fishing trip is an annual affair with these adventure-some electrical men.

George A. Hughes, president of the Edison Electric Appliance Company, Inc., after having delivered a series of addresses in behalf of the defeat of the proposed Water and Power Act, has returned to his headquarters at Chicago.

F. G. Baum, a consulting engineer of San Francisco, is visiting in eastern business centers.

E. O. McCormick, vice-president of the Southern Pacific Company, was chosen permanent chairman of the Pan-Pacific Commercial Congress at the recent meeting of that organization in Honolulu. The congress has been organized for the purpose of promoting a greater spirit of friendliness among the nations bordering the Pacific.

Guy L. Bayley, formerly chief of the mechanical and electrical departments of the Panama-Pacific International Exposition and for many years engaged in hydroelectric work on the Pacific Coast, has joined the staff of Sanderson & Porter, consulting engineers of New York, Chicago and San Francisco, and will be particularly concerned with water power. Mr. Bayley will be located



GUY L. BAYLEY

in New York. Following his graduation from the University of California, Mr. Bayley was employed by electric public utilities on the Pacific Coast, notably the Pacific Gas & Electric Company, the Sierra & San Francisco Power Company and the Universal Electric & Gas Company, as an operator of hydroelectric systems, and in 1916 he erected the hydroelectric plant in Yosemite for the Department of the Interior. More recently he became interested in foreign exportations, and he has toured Japan, Korea, China, Siam, the Straits Settlements, Java and Sumatra as assistant to the president of the Federal Export Corporation of New York City. He had already had experience in this work, having represented the American Trading Company from 1900 to 1904 in Japan.

Obituary

John Forrest Kelly, an electrical engineer and a pioneer in electrical research, died recently at his home in Pittsfield, Mass. In 1879, the year after his graduation from the Stevens Institute of Technology, Mr. Kelly was employed in Thomas A. Edison's laboratory, and after a number of years in the employ of the Westinghouse Electric Lighting Company, Newark, N. J., he went to Pittsfield as consulting engineer for the Stanley General Insulating Company, which later became the Pittsfield works of the General Electric Company. He received more than eighty patents on devices for generating, transmitting and distributing electricity and was a pioneer in high-tension transmission.

Manufacturer, Dealer and Jobber Activities

Brown & Pengilly, Los Angeles manufacturers of switchboards, panelboards, cabinets, radio transformers and overload relays, are constructing a new factory at 2114 East 9th St., to take care of their increasing business and to increase the scope of their manufacturing activities. The new factory will include an electrical testing laboratory which will enable this firm to enlarge its industrial testing facilities.

Announcement is made of the reorganization of the Eccles & Smith Company, which is now composed of Phillip Rowe, for 20 years with the Halliday Machinery Company of Seattle; Chris Eccles, one of the founders of Eccles & Smith Company; R. W. Baxter, railroad and traffic expert; W. E. Ringwood, for 16 years in the machinery business on the Pacific Coast; and Frank T. Sweeney for 16 years with the Eccles & Smith Company. Present locations of the company in Los Angeles and San Francisco will remain unchanged. Eccles & Smith Company, which was founded in 1900, specializes in shop machinery.

The War Department has recently issued a booklet entitled War Surplus, which describes the method of disposing of government surplus supplies. The stocks which are to be offered for sale are also described in the booklet. Dates of sale are given on an insert leaflet.

Charles J. Reilly, representing a number of eastern manufacturers of electrical equipment and supplies in Denver, has transferred his accounts to F. D. Tee.

Scheeline Manufacturing Company of San Francisco, successors to Hulbert Manufacturing Company, manufacturers of electric steam radiators, electric water heaters, electric steam glue pots, and electric steam vulcanizers, are making a survey of the southern California territory and expect to open offices and secure distributors in this territory. G. L. Stannard, sales manager, has been in Los Angeles for some time conducting this work and reports considerable number of sales and an increasing number of inquiries.

The Sprenger Electric Company has recently been established in Colorado Springs, Colo., by W. E. Sprenger and his wife. The new company plans to specialize on novelty fixtures to harmonize with draperies and general interior decorations. Mrs. Sprenger will devote her time to aiding customers of the store in selecting the most suitable schemes of interior decorations for their homes.

The Weston Electrical Instrument Company, Newark, N. J., has recently placed on the market a new group of portable testing instruments. The new line to be known as the Weston Junior A.C. portable testing instruments is made up of the Model 432 junior single-phase and d.c. wattmeters, Model 433 junior a.c. voltmeters and Model 433 junior a.c. ammeters and millimeters. Bulletin No. 2906 recently published by the company fully explains each new instrument.

The Cutler-Hammer Manufacturing Company of Milwaukee and New York has incorporated their enclosed resistor type electric space heater in various types of complete heaters for railway car service,—such as the cross-seat, panel, truss plank, vestibule, etc., to meet car mounting conditions. These complete heaters are marketed by the National Railway Appliance Company of New York. The nickel chromium alloy resistor used in the heater is separately insulated by pure mica and securely enveloped in a sheet steel sheath in two lengths, 18 and 24 inches.

The Westinghouse Electric & Manufacturing Company has recently opened a new plant in Seattle, Wash., which includes an assembling and repair shop, a warehouse and a district sales office. All of the activities of the company in the Seattle district are now located in one plant making possible close cooperation of the sales organization, the service department and the warehouse. The plant's location along the waterfront permits the use of a spur railroad track for the loading and unloading of equipment at the warehouse door. In the new building the warehouse is directly accessible to the general offices. The lock on the warehouse door is operated electrically by a push button on the shipper's desk, thus preventing the entrance of anyone without the shipper's permission. As the plant is located two and one-half miles from the business center, a cafeteria was necessary. The company installed one which is entirely electrical.

The Montana Electric Company of Anaconda, Mont., has recently entered the retail electrical business. This firm has been in the wholesale business for the past 30 years. The firm has taken over the state agency for the products of the Radio Corporation of America and a radio expert will be in charge of the department devoted to this class of merchandise.

Through the manager, A. C. Cornell, of the Western Electric Company, Inc., in Denver, a washing machine manufactured by that company was awarded as a prize at the recent American Legion Show there. W. J. Laufenburg was in charge of the company's display.

According to a report from Denver, one of the most attractive window displays in that city during the Halloween season was that of the Headrick Electric Company on South Broadway. Mr. Headrick, the proprietor, is chairman of the Electrical Cooperative League in that city and only recently returned from an extended eastern trip where he obtained a number of new ideas which he embodied in the novel window display.

William A. Moody, formerly connected with the electric range and water heater department of the Pacific Gas & Electric Company, San Jose division, has been employed as direct factory representative in northern California for the Automatic Electric Heater Company, of Warren, Pa. Mr. Moody's headquarters are at 63 Second Street, San Francisco. His many years of experience in the electric heating field will enable him to give assistance in the merchandising of the company's products, to the trade in his territory. He will give his time in handling the sales of Sepco Automatic Electric Water

Heaters, glue pots, solder pots, vulcanizers, battery steamers, as well as the company's general line of electric heating appliances.

Betts & Betts Corporation, of New York City, has recently employed Howard C. Hakes as a special representative of the company to work in the state of New York. Mr. Hakes was formerly with the Charles R. Ablett Company of New York.

Harvey Hubbell, Inc., of Bridgeport, Conn., has recently manufactured for sale a new two-cord plug designed for use with narrow shades. The new tap consists of three parts, a standard plug base threaded to fit lamp sockets and having parallel slots, a te-cap which may be attached to any lamp cord like an ordinary cap, but which carries te-slots into which may be plugged the blades of a second cap and a cap with parallel blades which plug into the te-slots. Bulletin No. 6850 gives the details on the new plug.

Morrison & Chaix, of San Francisco, Calif., have recently issued two descriptive leaflets describing the firm's Quill Rectifier outfits. The leaflets describe Types M.B., S.B., and D.B. All three of these battery chargers are patented products of the Pacific Coast manufacturers.

The Valley Electric Company of St. Louis, Mo., has recently designed a new model radio and automobile battery charger, suitable for installation and use in any room in the home. The battery charger is enclosed in a moulded glass cover, thus leaving all working parts open to inspection. The device is known as the Valley Type A and B Charger.



WINNER TAKES ALL!

The gentleman on the right with the chandelier draped gracefully over his arm, is Fred S. Mills, western district manager of the National X-Ray Reflector Company. Fred is talking to Norman Hickox, sales manager, about the new studios which he recently opened up in Los Angeles. Rumor has it that when Norman heard that Fred was coming to Chicago bringing with him his famous trained African dominoes, Norman immediately hid himself to Canada and returned with a proper welcome. Notice that they are both loaded up.

Trade Outlook

San Francisco

Business conditions in the San Francisco territory continue to show up favorably as compared with former months. Manufacturing continues active, with most of the firms that closed down several years ago, opening up to supply demands for manufactured products. Between-season buying activity is the important thing in the retail trade. Moderate-priced merchandise is receiving the most attention from buyers. Continued warm weather has delayed purchases of winter clothing.

Grain and produce are receiving better prices. A steady demand is prevailing for canned goods and the large stock prepared this year is already fairly well sold. A demand for railroad cars for the movement of grain, fruit and coal has caused a slight decline in lumber shipments. The recent rains have been rather disastrous to rice growers in the Sacramento Valley, but farmers in the vicinity have been benefited.

Spring delivery orders indicate confidence in present prices. Sales to date this year average 7 to 8 per cent better than the same period for 1921. This increase has been brought about largely by the volume of business transacted in the last few months, which counterbalanced the smaller business done during the year.

Portland

The car shortage in the Portland district is cutting down lumber deliveries and resulting in a curtailment of orders. For the past several weeks lumber production has been at or above normal and has exceeded both orders and shipments by considerable amounts. As a result stocks are piling up for want of cars. Thousands of cars have been used to move fruit and grain and the lack of westbound loadings indicates that the situation may be worse before improving any. There are, however, at present, no indications of reducing the lumber output below normal. Log production continues at capacity rate.

The fruit shipments, depending as they do upon refrigerated space, are seriously affected by the car shortage, resulting in considerable loss with the danger of frosts ahead. About 2 per cent of last year's fruit crop was handled out of Portland on refrigerated steamers. This plan worked so well that a larger volume is moving by water this year.

Indications are that building for 1922 in Portland will reach \$22,000,000, thus passing the record year of 1910 by more than a million dollars. Total permits to Oct. 31, 1922, were \$20,123,560. A recent canvass of Portland architects showed that the total value of the building work in architects' offices that is practically sure to go ahead in the near future is over eighteen million dollars.

Electrical jobbers and dealers report business good, with decided improvements in sales of washers, cleaners, and household appliances.

Bank clearings for October, 1922, showed a healthy gain over the corresponding period of a year ago, the figures being for 1922—\$172,789,063 and for 1921—\$153,774,920. This year's record is very close to the previous high record made in 1919.

Denver

With a marked improvement in transportation facilities and a continued spell of fair weather, business conditions, in and around this city, as reflected by reports from various leading industrial concerns, banks, municipal officers, and the government, are steadily improving. Coal is being mined at a record rate. Bank clearings for October totaled \$158,112,921, an increase of \$22,843,191 over October, 1921, and the highest monthly total of the year thus far. Building permits were issued to the amount of \$1,211,300 during the month. Receipts at the post office were \$248,853, representing a gain of 11.2 per cent over the 1921 figure. Retail buying indicates a healthy holiday business.

Prices on wire, conduit, schedule materials, and wiring devices are strengthening and additional rises are anticipated. In some lines delayed deliveries give the appearance of a seller's market and consequently it is believed further supply shortages will occur. Considerable interest is being expressed in street lighting equipment. Electric sign sales are the heaviest in several years.

Salt Lake City

Total individual, demand and time deposits in the state banks of Utah, as of Oct. 15, reached the largest total since Mar. 25, 1921. This is a good indication of improvement in general business conditions in the inter-mountain section.

Retail merchants report sales of a greater volume than for the same time last year, with collections fair.

In the agricultural districts the beet harvesting season has just come to a close, and the farmers are receiving their money from the sugar companies.

New construction work is keeping the electrical contractors busy. The movement in appliances, however, is not very brisk, except on seasonal material.

The Utah Power & Light Company is furnishing employment to nearly a thousand men in addition to its regular forces, on construction work at various locations on its system. Its largest construction job is the installation of a fifth unit at its Grace plant on the Bear River. A new flume is also being built in Logan Canyon.

Mining activity continues unabated, and some of the mines are finding difficulty in obtaining men.

Los Angeles

The month of October witnessed the second largest monthly total in the history of Los Angeles building, with a total of \$11,580,427, while the new high record was set by the number of permits issued, 4,951. This brought the total for the year well over the hundred

million dollar mark, and approximately thirty-six million more than for the corresponding period of 1921.

Bank clearings for the last fifteen days of October amounted to \$264,895,126.97, which compares with the same period of 1921 with \$190,407,130.37 as an increase of approximately 33 per cent.

Sales of electrical supplies and apparatus continue unabated with a marked increase in the sale of appliances, particularly electrical heaters, which is due to the advent of cool weather and an increased market for the Christmas trade.

The conduit situation has improved over the recent slight shortage due to the railroad strike and the inability of eastern manufacturers to produce sufficient quantities to supply the local demand.

The sale of radio receiving sets has recently received a wonderful impetus due to the recent installation of the Los Angeles Times broadcasting station. This is a class B station and broadcasts on 400 meter wave length and is one of the most powerful stations in the West.

Seattle

With the car shortage in Washington continuing, and no immediate relief in sight, the state department of public works has issued a statement to the effect that it is absolutely powerless to direct distribution of cars in interstate movement. The shortage is the outstanding factor in the lumber industry and is cutting down deliveries and curtailing orders which otherwise would be plentiful. The shortage for various districts ranges from 25 to 50 per cent. Lumber and shingle mills on branch lines are getting practically no supply of cars. Water shipments of lumber from Pacific Northwest ports show remarkable increase, and indicate that Northwest lumber has gained a strong foothold in Japan, Australia and South America.

Labor conditions reported satisfactory, with demands from public improvements, irrigation projects, fruit and grain harvests.

Electrical jobbers report a very satisfactory volume of new business and encouraging prospects for the winter. Business men in all lines are predicting a heavy Christmas business, and are laying their lines to go after the holiday trade. Special efforts to induce shoppers to invest in electrical gifts will be put forth, and every possible step taken to make this an "electrical Christmas."

Appliances of all kinds are moving well, with ranges particularly in demand. A number of new apartment houses to be erected will install electric ranges. Pole line material is in good demand, due to a number of important high-tension transmission projects in eastern and western Washington. Heating appliances have become popular with the last two weeks of "crimpy" weather, and an unusual interest in this equipment is noted this fall. Serious shortage in conduit continues, with orders accumulating rapidly. Demand for lamps has been good, with a tendency on the part of the householder to show more discrimination in buying for replacements.

Construction News

Bridges

Ariz., Prescott—Construction of a modern steel bridge to span the Agua Fria River at Canon, on the Black Canyon road, will be undertaken by the Yavapai County highway commission. The commission has authorized a call for bids on the structure. The bridge will be of the steel truss type, consisting of two spans and will be 231 ft. long.

Ariz., Nogales—Lown & Wood have been awarded contract at about \$17,000 to construct a new state highway bridge over Sonoita Creek at Patagonia.

Calif., San Francisco—At a recent meeting here of the state highway commission contract was awarded for the construction of a reinforced concrete bridge across Susan River, near Fredonia, Lassen County, to Rocca & Caletti, San Rafael, at a price of \$25,225. The state will furnish materials of the value of \$9,901.25.

Calif., Los Angeles—Bids are being received by county supervisors for constructing a reinforced concrete, girder type bridge on the state highway over mouth of San Gabriel River at Alamitos Bay. The bridge will consist of ten 54-ft. spans and one 22-ft. span on concrete abutments and concrete piles; 24-ft. roadway with ornamental precast concrete rail and 4 light posts. Certified check for 10 per cent. Plans and specifications at office of supervisors.

Calif., Los Angeles—Bids are being received by county supervisors for constructing reinforced concrete, girder type bridge on state highway over Topanga creek about 4 miles north of Santa Monica. The bridge will consist of four 54-ft. spans with concrete piers and abutments on wooden piles; 24-ft. roadway, with ornamental precast concrete rail and 4 light posts. Certified check for 10 per cent. Plans and specifications may be obtained at office of supervisors.

Calif., Sacramento—Until 2 p.m., Nov. 20, bids will be received by California highway commission, 515 Forum Bldg., Sacramento, for constructing reinforced concrete bridge, consisting of four 30-ft. girder spans with necessary bents, abutments and wing walls, over Newhall creek at Newhall in Los Angeles County. Plans and specifications may be seen at division offices, Pacific Finance Bldg.

Idaho, Boise—A contract has been awarded W. A. Byers & Co. of Spokane for Federal Aid Project No. 64, Section A, for four 90-ft. steel bridges with concrete substructures over the Coeur d'Alene River at \$45,032.40.

Ore., Portland—Sealed proposals for the removal of the old wooden structure and the construction of a complete new steel bridge across Crooked River at the present site of what is known in the community as the O'Neil bridge, approximately 12 miles westerly from the city of Prineville in Crook County, Oregon, will be received until 10 a.m., Nov. 17, 1922.

Ore., Fossil—The Fossil highway job will be built complete—grading, surfacing and bridges—this fall. The state engineering department will build the two bridges. Kingsley Lytle, resident state engineer, received instructions from Division Engineer Wanders of The Dalles recently to arrange for the purchase of lumber, bolts and other materials for the bridges.

Utah, Salt Lake City—The Heuser-Packard Company of Springville was low bidder for the surfacing of the overhead crossing where the state road crosses the Bamberger electric railroad tracks at Farmington. Its bid was \$11,265.08. The plans call for a cement concrete slab, 7 in. thick and 8 ft. wide, for installation of a lighting system and for moving the guard rail of the bridge.

Dams

Ore., Astoria—Engineer Bergsvik has submitted to the Astoria water commission the plans and specifications for increasing the height of the dam at the headworks reservoir in Deer Creek. Action on the proposed improvement was deferred until a later date. The proposed project is to raise the height of the dam 16 ft., thus increasing the capacity of the storage reservoir by 112,000,000 gal., or a total of 213,000,000 gal. The estimated cost of the improvement is \$75,000, but it is not expected the work will be done before next spring and early summer.

Wash., Olympia—J. E. Malinowski has been granted a permit to construct a large dam and reservoir on the Wynoochee River about 25 miles north of Montesano. Proposed dam would be 160 ft. high, 275 ft. across the top, and the reservoir will hold 80,000 acre-feet of water.

Highways

Ariz., St. Johns—Bids are being received by Apache County highway commission, St. Johns, for constructing St. Johns-Springerville highway, federal aid project No. 60. Work will involve approximately 28,000 cu. yd. excavating, 32,000 cu. yd. borrow, 17,000 cu. yd. surfacing, 700 cu. yd. concrete, and other incidental items. Certified check, 5 per cent. Plans and specifications may be obtained from the county highway engineer or from Thomas Maddock, state engineer, Phoenix, upon payment of \$5.

Calif., San Francisco—A contract for the grading of about eight and a half miles of road in Napa County, between three-fourths of a mile south of the northerly county boundary and one and one-half miles west of Calistoga, was awarded by the state highway commission at a meeting in San Francisco to the Ross Construction Company of Los Angeles on the basis of its bid of \$216,507. In addition to this price, the state will furnish materials of the value of \$19,244.62.

Calif., Sacramento—After rejecting all bids on the ground that they were excessive, the state highway commission decided to place on a day-labor basis the work of graveling approximately 10 miles of the highway between Ione and Jackson, Amador County. The lowest bid received by the commission was \$58,500, as compared to the engineers' estimate of \$41,340. The commission had the alternative of ordering the work done by labor or readvertising for bids, but decided in favor of the former course owing to the time element and the desire of members of the road body to get the work under way before winter sets in. Proposals for paving about a mile through the towns of Atwater and Livingston in Merced County also were rejected by the commission and the work will be readvertised. No action was taken by the commission on proposals for grading and graveling over 13 miles on the Skyline Boulevard south of San Francisco. Before awarding a contract members of the road body said they desired further time for investigation. The lowest bid was submitted by P. L. Burr, San Francisco, and totaled \$336,814 as compared to the commission engineer's estimate of \$321,425.50.

Calif., San Francisco—Apportionment of the \$282,000 remaining in the county good roads fund was agreed upon at a joint meeting of the finance and streets committees of the board of supervisors. The committees' recommendations will be presented to the supervisors. The fund paid by San Francisco motorists, which accrues to the county as a refund from the state vehicle tax, will be spent as follows: Telegraph Hill boulevard, \$33,000; Marina boulevard rock fill, \$45,000; Sloat boulevard improvements,

\$52,000; Lincoln Park boulevard extension to the Great Highway, \$60,000, and "Scotch Hill" improvement, Potrero district, \$65,000. The remaining sum in the fund, amounting to over \$25,000, will be available for the initial expenses of the proposed additional highway down the peninsula, according to Supervisor McLeran.

Calif., Barstow—Supervisor C. S. Crain of San Bernardino County has been asked by the California State Highway Commission to secure rights-of-way for the Victorville-Barstow link in the "Old Trails" highway. There is \$35,000 available for immediate construction on this section and \$360,000 more has been appropriated for the long stretch from Barstow to Needles. Arizona is working steadily to improve the "Old Trails" highway through her territory. The worst part of this transcontinental route in California is between Ludlow and Amboy on the long stretch from Barstow to Needles and the \$360,000 appropriated for it will probably be used to make this difficult section passable. Priority will be given to the improvement of the Victorville-Barstow road because the appropriation for this section antedates that for the longer stretch.

Calif., Santa Ana—Wells & Bressler, California Bank Building, Santa Ana, were awarded contract by county supervisors at approximately \$17,000 for paving with 4-in. cement concrete about one mile on the San Juan Hot Springs road, in the Fifth District.

Calif., Los Angeles—A final survey is being started by the California Highway Commission on ten or eleven miles of state highway in Imperial County, at the west end of the plank road which crosses the sand hills on the route to Yuma, preparatory to calling for construction of this section of pavement. As there is only enough water available in that locality to supply a construction camp for domestic use, an asphaltic type of pavement is the only feasible one. A contract was let in September, 1921, for paving with asphalt concrete 10.74 miles between the east high line canal and the new county well on the Holtville-Yuma highway. This section is at the west end of the one about to be surveyed. Contractor George H. Oswald of Los Angeles, who is doing the work, was unable to finish the job before the hot weather interrupted it and he is now preparing to complete the work, about 2 miles remaining unpaved. Construction of about 50 miles of surfaced roads is contemplated by the supervisors of Imperial County, who recently took over the gravel pit and crushing plant established by the Imperial County highway commission. This mileage represents scattered sections of road throughout the county which will be improved through the organization of road improvement districts. The county's participation will be apportioned on the basis of the taxes collected in the different districts. Most of the roads will have graveled surfaces but some of the districts desire a more permanent type.

Colo., Denver—The state highway department will shortly call for bids for the construction of a modern highway on the old Colorado Midland Railroad right-of-way between Lake George and Howbert, a distance of approximately 12 miles. The cost is estimated at \$60,000 and will utilize three old railroad tunnels.

Idaho, Sandpoint—The Sloan Construction Company of Spokane has been awarded the contract for the construction of the East Hope-Pack River highway at \$172,408.70.

Idaho, Wallace—The contract for the construction of the Mission Flats road has been awarded as announced by forestry officials in Missoula to the General Construction Company of Spokane for \$69,000.

Idaho, Kootenai—The Triangle Construction Company has been awarded the contract for building the Kamia Hill road at \$688,783.03; this does not include 1,700 ft. of culvert pipes.

Idaho, Blackfoot—The grading and surfacing with crushed gravel of 13½ miles of Yellowstone Park highway at \$58,826.70 is to be done by Clem & Shafer. The road is to be constructed jointly with federal, state and county money.

Idaho, Boise—The Bureau of Highways has awarded the contract to grade and drain 2.29 miles of Clearwater highway, State Aid Project No. 52, at \$10,852.97, to White & Jordan, Weippe, Idaho.

Idaho, Gooding—Twenty-five miles of road from Pickel Butte to the Oregon line, as part of the Oregon-Nevada highway, will cost about \$125,000. This proposed new highway is causing much interest in southwestern Idaho.

Mont., Missoula—The construction of 117½ miles of high class crushed stone highway on the Flathead Indian reservation, with the aid of federal road funds, has been announced by U. S. Marshall, resident district engineer for the state highway commission. The new road will extend from a point three miles south of Arie to St. Ignatius. Contracts are to be let before Jan. 1, 1923.

Mont., Missoula—A contract for the Belton-Java, Belton-Nyack road project has been let by the United States Bureau of Roads to Sims & Carlton Company of Spokane, Wash. This section of road, 7 miles in length, is said to be the only part of the Roosevelt highway between Portland Me., and Portland, Ore., which cannot at present be traveled. The cost of the improvement will be \$178,778.38.

Mont., Helena—Contracts for three federal aid highway and bridge projects were awarded by the state highway commission recently. The principal piece of work involved is the building of a 10.64-mile stretch of the Yellowstone-Glacier bee line between Belt and Riceville in Cascade County. This contract was awarded to White, Brown & Leahy of Great Falls, at \$99,753.48, nearly \$9,000 below the estimates made by the engineers. A contract for the erection of two small steel bridges and a concrete bridge on this stretch of the road was let to McGuire & Blakelee of Great Falls at \$24,956, more than \$7,000 below the estimate. The same firm of bridge builders obtained the contract for the construction of a steel bridge, with concrete floor and abutments, across Belt Creek in the town of Belt, Cascade County, on its bid of \$21,757, nearly \$700 less than the estimate. Another contract was let for the construction of several small bridges on the Yellowstone trail east of Pompey's Pillar in Yellowstone County. This contract went to the Security Bridge Company of Billings at \$13,209.50, nearly \$4,000 below estimates. The State Highway Commission of Montana is at present engaged in completing surveys and plans for the projects proposed for 1923 construction, involving 225 miles of road and 16 bridges of over 20-ft. span, and located in different counties. These projects will be advertised for bids in the late fall and winter, but in order to give the contractors an opportunity for a field inspection of the proposed improvements during the favorable weather, and before plans, estimates and specifications are complete, the department will furnish all interested contractors, upon request, sketch maps and other data and information as may be available at the time for inspection. U. S. Marshall, resident engineer of the state highway commission, announces that arrangements have already been made for construction, with the help of the Federal Aid road funds, of 182 miles, total, of highway, averaging \$10,000 per mile.

Irrigation Projects

Calif., Oroville—Despite the refusal of the State Bonding Commission to approve the plans for the irrigation of the Honcut-Yuba Irrigation District by the proposed Yuba River diversion, the board of directors called an election, asking

the electors to vote \$1,655,411 in bonds for the construction of the works. The election is to be held on Nov. 24.

Wash., Wenatchee—Winter work on the Wenatchee reclamation district has started, which includes the replacement of wooden flumes with concrete ditches, relining old ditches, installation of pipe, and completion of the new tunnel opposite Cashmere. The work will cost approximately \$85,000.

Wash., Spokane—Bids will be received shortly for the construction of an irrigation siphon under the Spokane River near Greenacres, to carry water for lands included in the Spokane Valley and Greenacres irrigation projects, by the Spokane Valley Land & Water Company. The siphon will be a steel pipe 48 in. in diameter, beneath the river, and 66 in. in diameter at both ends. The process of construction will include diverting the water to one side of the river by a cofferdam, and then diverting it to the other side by a second cofferdam, when the first portion is completed.

Wash., Pomeroy—Spokane promoters of a \$2,000,000 project to irrigate 25,000 acres midway between Dayton and Pomeroy are completing tentative plans for the project. These plans call for a project costing \$75 to \$80 an acre, and a 16-mile flume to carry water from the Tucannon River. It will require two tunnels, one 2,400 ft. long and another 700 ft. long. J. Nausbalm and Dr. Stanley H. Titus of Spokane, head the project.

Wash., Yakima—The last of the four power drops installed by the U. S. Indian Reclamation Service on the Yakima Reservation has been completed. The four drops will generate 11,000 hp. and will be utilized to pump water to higher levels, irrigating about 20,000 acres.

Wash., Newport—The Upper Columbia Land Company will install a \$350,000 dam at Onion Creek for irrigation purposes. The headquarters of the company are located at Marble; Joseph Reed, manager.

Wash., Aberdeen—The Parker-Schram Company of Portland, Ore., has been awarded the contract to commence the new drainage district in South Aberdeen to be known as No. 4. The amount involved is \$75,000 to \$80,000. The contract calls for the dyking of between three and four miles of territory, over thirty miles of ditching and over ten miles of streets.

Power Projects

Ariz., Florence—\$200,000 electric power district bonds carried 100% in an election held recently. It is proposed to extend a power line from Sacaton to the state prison and other lines will be extended to Casa Grande through the farming district.

Ariz., Lompoc—A bond election will be held soon to vote on a proposition to bond the city for \$30,000 or more for the purchase of the plant of the Lompoc Light and Power Co.

Calif., San Diego—Permits have been granted by the federal power commission at Washington, for the development of two big power projects in San Diego county, one on Boulder creek and another on Santa Ysabel river, was announced by Col. Ed. Fletcher. The Boulder creek plant is to be 1,300 hp. and the plant on the Santa Ysabel river is to develop 3,600 hp. The latter calls for the construction of a 200-ft. dam. The waters of Boulder creek are to be used for turbine purposes by means of a pipe line.

Colo., Chandler—A transmission line will be run from Chandler to Ilse in Custer county, Colorado for the electrification of the Terrible mine and affiliated milling plant at that place. The distance is 14 miles and the cost of construction and installation will be about \$25,000. The Southern Colorado Power Company will furnish the power.

Ore., Portland—Articles of incorporation have been filed for the Lincoln County Light and Power Company with a capital of \$40,000. The company will generate and sell electric energy for all purposes. Articles were filed by Maurice W. Seitz, Northwestern Bank Building, Portland.

Wash., Seattle—Snohomish county commissioners have granted the city of Seattle a franchise for the construction of power transmission lines for its Skagit River project, the franchise to run 50 years. More than 50 miles of line will be erected in Snohomish county.

Wash., Spokane—Construction of the new 60,000-volt power line from Lind to Colfax and Pullman, a distance of 85 miles, is about half completed by the Washington Water Power Company, and it is expected the line will be ready for operation by December 15.

Wash., Edmonds—The Washington Coast Utilities of Seattle has begun the construction of a second power transmission line from Edmonds to Richmond Beach, to care for increasing business originating at industrial plants in the vicinity.

Railways

Calif., San Francisco—A contract for the immediate construction of a \$200,000 reinforced concrete lined tunnel near Metz, on its coast line between San Francisco and Los Angeles, has been awarded by the Southern Pacific Company to the Utah Construction Company, according to announcement by railroad officials. Elimination of sharp 10-deg. curves, with a resultant faster train service and increased operating efficiency, are given as the reasons for the construction of this tunnel.

Cal., Merced—Early commencement of work by Merced irrigation district on the relocation of the Yosemite Valley railroad and construction of the Exchequer dam were indicated by the receipt at the office of the district of a letter from F. G. Drum, president of the Yosemite Valley Railroad Company agreeing to arbitration of the amount to be paid by the district on account of increased cost of operating the new line. The Exchequer reservoir will submerge about ten miles of the present line of the Yosemite Valley Railroad, and a new line beginning at Merced Falls has been laid out along the south side of the river and skirting the upper water line of the reservoir. It will contain several high fills and some tunnels and will cross the upper portion of the reservoir on a high steel trestle.

Calif., Los Angeles—The board of public utilities has approved application of the Industrial Terminal Railway Company to erect a railroad system to serve the Alameda and Lyon street industrial district. The city council will probably approve of it also, when it will be offered for sale.

Calif., Long Beach—An ordinance passed by the city council calls for relocating that portion of the route and railroad tracks of the Pacific Electric Railway Company, along Alamitos and Olive Avenue to a connection with the tracks on right-of-way on Broadway, as authorized to be constructed by ordinance No. A-214.

Calif., Los Angeles—The board of supervisors ordinance No. 780, granted the Pacific Electric Railway Company a franchise to construct an electric railroad on Lorraine Avenue from Alosta Avenue to Comprise Line Road.

Calif., Glendale—Practically all of \$10,000 needed for lowering of Pacific Electric tracks on Brand Blvd. from Colorado Street south has been paid into the bank by subscribers to this proposition. A letter has been forwarded to the Pacific Electric Railway Company by Glendale city officials asking them to start work at once.

Calif., San Pedro—The Pacific Electric Railway Company applied to the city council for a franchise to lay and operate a second track on Front St., between 5th and 6th Sts., and on 6th St. to Pacific Avenue. The cost of double tracking construction along this route is estimated at \$120,000.

Calif., Long Beach—The Pacific Electric Railway Company will start to reconstruct East Broadway line and establish direct service between Long Beach and Huntington Beach at once. Work has started in Broadway line from Alamitos to Redondo Avenues. Cost, \$100,000. New ties will be laid, new steel substituted where it is needed and right-of-way will be paved.

Calif., Los Angeles—A large program of extensive improvements and repairs is now being made at various points on its lines by the Pacific Electric Railway, the cost of which will exceed \$1,221,000. The work being done is designed to care for the increased traffic demands and to bring its facilities up to pre-war standards. Following are the more important improvements now in progress: Reconstructing and repaving Raymond and North Fair Oaks Ave. in Pasadena, American Ave., Long Beach, South Hill Street, Los Angeles; constructing three freight passing sidings at Kent, Abila and Dominguez on Long Beach line; installing five freight storage sidings at Los Angeles Harbor; installing automatic block signals on Pasadena Short Line in vicinity of Oneonta Park; installing interlocking plant with the Santa Fe at Los Nietos on Whittier line; also at La Habra with the Union Pacific's new Whittier to Fullerton extension; constructing steel span bridge over San Gabriel River at Rivera Station; rock ballasting four tracks in Los Angeles between 9th St. and Slauson Avenue on private right-of-way; installing automatic substation for Hollywood line near Milton Avenue and Santa Monica Blvd., and reconstructing long trestle over Los Angeles River on Long Beach line, installing 500-ft. steel spans and adding 500 ft. to present trestle as flood control measure. All of the foregoing work is now in progress and will be rushed to completion before the winter season arrives.

Idaho, Twin Falls—The Idaho Central Railroad Company, backed by the Western Pacific Railway Company, will complete within a year's time ninety miles of railroad to connect Twin Falls with the Western Pacific and the Southern Pacific lines at Wells, Nev., according to an announcement made here by Conrad Wolfley of San Francisco, president of the Idaho Central company. The undertaking involves an estimated expenditure of \$1,600,000. Surveys already have been completed over about one-half of the route by engineers who have been in the field since early September. The connecting line will afford to the Twin Falls district a direct railway outlet to Southern Pacific coast markets and will tap the Contact, Nev., copper mining district.

Ore., Grants Pass—Contracts for the construction of the three miles of railway to the Cheney Creek line quarries have been let by the Beaver Portland Cement Company, it is understood. These contracts include ties, fencing materials, camps, barns, and other items of construction. Bids were received recently by the company but these were considered too high and it was decided that it would build the railroad under its own supervision. The new railroad, to be known as the Marble Mountain railway, is to connect at Wilderville with the California and Oregon Coast Railroad, built out from this city, and extends to the lime quarries, from which the rock is to be taken to Gold Hill where the present plant is located.

Street Lighting

Calif., Santa Monica—Plans for the new ornamental lighting system to be installed on the Santa Monica boulevards in the near future have been completed by the city engineering department, according to an announcement by Commissioner of Public Works Carter. The posts which will be placed along the highways are of Grecian design, with two lights of 500 watts or more. The lighting system will include one post at each alley corner and one at each street intersection, on either side of the street, six posts to the block.

Calif., Los Angeles—H. H. Walker has been awarded contract for furnishing and installing ornamental lights on 6th St., between Pacific Ave. and Harbor Blvd. Cost, \$11,660.

Calif., Los Angeles—Southern California Electrical Company was awarded contract for installing ornamental street lights on Broadway between 10th and Pico Sts. Price, \$14,996.

Calif., San Bernardino—Bear Valley Utility Company was awarded contract by county supervisors to install lights in Bear Valley lighting district. The work involves 80 posts with 200-watt, 110-volt lamps lighting all the principal streets. Work is to be completed by April 15. The contract includes current 9 months in the year.

Calif., Glendale—H. H. Walker, 1800 W. 12th St., Los Angeles, was awarded contract by city council at \$14,818 for installing ornamental street lights on San Fernando Road, between Pacific Ave. and Los Feliz Road, involving fifty 2-light Marbelite posts.

Wash., Aberdeen—The city council has passed an ordinance providing for installation of a system of standard lamp posts, by means of an improvement system covering a number of streets in the east and north part of the city.

Streets and Sewers

Calif., Turlock—Ordinance 210 passed by the city trustees calls for a bond election for the sum of \$25,000 for the extension of the sewer system within the city limits and the construction of a concrete pipe from the present sewage disposal plant, to a point about five miles from the city limits.

Calif., Madera—Bids are being received by city trustees for constructing a sewage disposal plant, consisting of Imhoff tank, sprinkling filter and final settling tank, estimated to cost approximately \$39,000. Bids previously taken on this work were rejected. Frederickson & Shannon bidding on the job at \$43,000. Plans have been revised and may be obtained from City Engineer F. A. Newkirk, upon payment of \$10. Certified check, \$2,000.

Calif., Pasadena—Until 11:30 a.m., Nov. 24, bids will be received by city directors for machinery for activated sludge sewage disposal plant at city sewer farm. Plans and specifications on file with city engineer. Certified check, 10 per cent. Bessie Chamberlain, city clerk.

Calif., Glendale—E. L. Fleming, 1007 So. Boynton St., Glendale, was awarded contract by city council Oct. 19, at about \$15,507.30, for paving East Wilson Street, between Verdugo Road and Broadway, involving 73,292 sq. ft. of 3-in. macadam paving, curb, walk, etc.

Calif., Los Angeles—More than 45 acres of the 200-acre site of the Central Manufacturing District, on Downey Road just north of Maywood, will be taken up in streets, it is estimated by F. L. S. Harman, industrial agent. There will be nearly 5 miles of streets, 5 miles of water lines, 5 miles of sewer lines and over 23 acres of street paving. The cost of improvements will be upwards of \$500,000.

Calif., Tracy—According to the report of City Engineer W. D. Harrington, the cost of the improvements the city of Tracy contemplates

making will take \$125,850. This total will take care of the installation of a new sewage disposal works, water works extension, paving of streets, the erection of a firehouse and the purchase of new apparatus for the south side and the fixing up of the city wells. The object of the report by the city engineer was to enable the city council to fix a stipulated sum for the proposed bond issue which will come before the people some time in December.

Calif., Alhambra—City commission passed Ordinance No. 1075 providing for the issuance of \$200,000 bonds by the city of Alhambra for construction of sewer system for the city, the construction of main sewers, outfall sewers, pump stations and treatment plant.

Colo., Denver—The contract for the paving of South Broadway from Exposition Avenue to the city limits, was awarded by the city to the Western Paving Company on the company's bid of \$155,705.60. The bid was under the estimated cost of the work, which was \$160,000.

Colo., Denver—The lowest bid made for construction of the Washington park storm sewer, the cost of which was estimated at \$400,000, was that of the J. Everett Young Construction Company, which was \$334,107.17, according to Walter B. Lowry, superintendent of improvements and parks. The construction company will be awarded the contract after Mayor Bailey has approved the bid.

Mont., Helena—At a cost of \$28,000 the surfacing of Breckenridge and Rodney Streets is to be done by the Pioneer Construction Company of Bozeman, award of the contract having been made by the city council.

Utah, Salt Lake City—Contract for the Capitol Hill curb and gutter extension was awarded to Gibbons & Reed on a bid of \$154,334.68 by the city commission. The construction will be of the monolithic type. Five bids were received by the commission. The contract price is approximately \$7,500 less than the preliminary estimate of the city engineer. The city's cost of the improvement, amounting to \$30,000, will be paid from the 1919-1920 bond fund.

Wash., Seattle—Contracts for three important street improvements, aggregating in cost \$277,121, were awarded by the board of public works. The paving of Alki Avenue from the ferry landing to the municipal bathing beach and thence on Sixty-first Avenue Southwest to Beach Drive was let to R. G. Stevenson on a bid of \$116,625.50. D. H. Traphagen was given the contract for paving Twentieth Avenue Northeast on a bid of \$54,560.30, and to J. L. Smith, the contract for paving Terry Avenue on a \$105,936 bid.

Wash., Tacoma—Contract for paving of North Cushman Avenue, 6th to Steele Streets, has been let to Anderson & Liljebeck, for \$15,272, specifying concrete. This was the lowest of four bids submitted.

Wash., Kelso—The city council has organized Local Improvement District No. 40, comprising Academy Street and adjoining streets, and providing for grading and concrete walks, at an estimated cost of \$18,600.

Wash., Seattle—The Associated Oil Company plans the construction of a large concrete retaining wall at 1747 Railroad Avenue South, on the site of the company's main terminal. Wall will cost \$75,000 and bids will be called in about 20 days.

Wash., Seattle—Property owners in the Denny Hill district have asked for a regrade of the remaining portion of Denny Hill, at a cost estimated by City Engineer J. D. Blackwall, at \$2,500,000. It is figured that 1,766,000 cu. yd. of earth would have to be removed from private property. The regrade is asked as a substitute for the rejected Dexter Avenue extension project.

Wash., Seattle—The low bid of Alexander & McNeil for sewers in West 62nd Street, et al., \$23,944, has been rejected, and new figures will be asked for.

Waterworks

Calif., Compton—Board of trustees passed Ordinance No. 132, authorizing issuance of \$75,000 City of Compton bonds, for the purpose of acquisition and construction by the city of municipal improvements, to-wit: a water system, main and supplementary, for furnishing to the city a water supply; wells, reservoirs, and mains in city streets.

Calif., Monterey Park—Bids are being received by City Clerk Arthur W. Langley for constructing reinforced concrete reservoir for city water system. Plans and specifications may be obtained at office of Olmsted & Gillelen, 1112 Hollingsworth Bldg., Los Angeles. Certified check for 10 per cent. The reservoir will be circular, 122 ft. diameter, partly excavated; vertical walls 9 ft. high, 8 to 10 in. thick; floor 6 in. thick; steel rod reinforced in walls and floor; about 2,500 cu. yd. excavation and about 400 cu. yd. concrete.

Calif., Santa Monica—Commissioner of Public Works, William H. Carter, announces that \$50,000 will be expended on improvements to the water system, an increase of over 9,000 in population making certain changes necessary. This money will be secured from the Los Angeles board of education in payment on school land at Ohio and Booneville Aves., in Sawtelle.

N. M., Hope—The city council has received and approved plans for a water system. The water mains are to be laid on the main residence and business streets of Hope. The stand-pipe, power house and reservoirs are to be on the lower end of fair grounds, with water main leading east from this point. Fire plugs are also arranged to cover the business and residence section of town. Maps and plans for this water system are furnished by F. L. Handcock, consulting engineer, of Denver, Colo.

Wash., Mukiteo—H. W. Troutman Company, Seattle, on a bid of \$13,569, received the contract for laying the water distribution system for the town of Mukiteo. Work will be completed in about two months.

Wash., Bellingham—Plans to change the city's water supply from Lake Whatcom to Skookum Creek, 17 miles from Lake Padden, the proposed reservoir, the project to cost about \$1,000,000, will be placed before the voters at the city election in December.

Wash., Port Angeles—Application has been filed with Marvin Chase, state supervisor of hydraulics, for 20 sec.-ft. of water from the Morse Creek for a municipal water system, and domestic supply. Estimated cost to be \$150,000.

Miscellaneous

Ariz., Ajo—Concentration Plant—Wisconsin Bridge & Iron Works, Milwaukee, was awarded contract for constructing steel frame concentration plant for the New Cornelia Mining Company at Ajo. Plant will have ore crushers, concentrating equipment, etc. Estimated cost of project, \$4,000,000. Kenyon Burch, Junior Orpheum Building, Los Angeles, construction engineer.

Ariz., Tucson—Fire Alarm System—R. D. Whitacre, city electrician, has completed plans for the \$20,000 fire alarm system to be installed by the city. Fifty-four new boxes will be installed. Bids will be readvertised for three new fire trucks, including two pumping engines and a 75-ft. aerial ladder.

Calif., Anaheim—City Improvements—City council has adopted a resolution to call a bond election to vote on an issue of \$160,000 for improvements as follows: \$20,000 to pave certain streets, \$100,000 for park improvements, includ-

ing swimming pool, Greek theater, and \$40,000 to complete new city hall.

B. C., Vancouver—Wiring—R. N. Dicer has been awarded the contract for wiring and apparatus installation for the new bakery being erected by Shelley Bros., Vancouver. It is reported that the contract was let for a figure around \$70,000. The bakery is to be a four-story reinforced concrete building, completely equipped electrically. All baking machinery will have individual power units regulated by dual control—separate control at each machine and remote control through switches in the engine room.

B. C., Victoria—Wiring—Hawkins & Hayward of Victoria, B. C., have been awarded a \$33,000 contract for the wiring of the new Royal Jubilee Hospital, Victoria, B. C.

B. C., Prince Rupert—Electrical Equipment—The Canadian General Electric Company has been awarded contract for the complete electrical equipment and cargo-handling plant of the new government dock, involving an outlay of approximately \$35,000 for the electrical installation.

Calif., Modesto—Amusement Park—Plans for the erection of a \$250,000 amusement park by the Green Mill Amusement Company, a San Francisco corporation, have been announced. The new venture will cover a 45-acre tract on the outskirts of Modesto on the Oakland highway and will be similar to a smaller park now being erected by the same corporation near Fresno.

Calif., Pasadena—Fire Alarm System—The Fire Protection Engineering Company and the Universal Tool & Die Shop, both of San Francisco, each bid \$17,250 for furnishing and installing 150 fire alarm boxes in connection with the new fire station at Broadway and Holly Sts. Cyril Bennett, 313 Kendall Bldg., architect.

Calif., Long Beach—Refinery—Pacific Petroleum Products Company, manufacturers of Mercury gasoline, will establish a refinery in Long Beach to care for Signal Hill output. A survey has been made by L. C. Monks, an official, with several of the company's engineers. Work will start as soon as a site has been selected.

Calif., San Pedro—Smelter—Buckley Milling Corp., an English syndicate, plans to establish a \$2,000,000 smelter and rolling mill in the harbor district. Gordon E. Vance, vice-president and Edgar T. Carlstorm, consulting engineer, are in San Pedro surveying the territory. The mill is for the purpose of supplying the Oriental trade.

Calif., Long Beach—Absorption Plant—John Henderson of the Henderson Petroleum Syndicate is completing plans for the erection of another gasoline absorption plant on Signal Hill. The plant will be operated as the Long Beach Gasoline and Refining plant, and will probably develop later into a topping plant. This company has been incorporated for \$1,000,000.

Calif., Los Angeles—Wharves—The Union Oil Company will construct a new 800-ft. loading wharf on reclaimed frontage at Los Angeles harbor, to cost approximately \$200,000. The Royal Dutch Shell interests have made application to the harbor commission for a lease of 600 ft. of frontage and six acres of land on Mormon Island for the construction of a marine loading station, storage tanks and pumping station. The plant of the Associated Oil Company is rapidly nearing completion and work will be started soon on the similar plants of the Mexican Petroleum and Pan-American Companies.

Calif., San Diego—Pier—A resolution declaring the necessity for issuing \$650,000 bonds to complete the proposed new municipal pier for San Diego has been adopted by the city council

but no time has been set for an election to vote on the proposition. The amount originally voted was \$250,000. Cost of a mole type pier 1000 ft. long, as originally planned is estimated at \$831,000. Council has authorized an appropriation of \$4,400 to pay for the preparation of working plans for the pier, which will be made by Frank G. White, chief engineer of the port of San Francisco. About three months will be required to complete the plans.

Calif., Los Angeles—Stockyards—Los Angeles Union Stockyards Company, 721 Pacific Electric Building, has commenced work on improving its 300-acre tract at Vernon Ave. and Downey Road. Work is being done under the supervision of G. W. Hegel, chief engineer, and Wm. T. Neil, contractor, whose offices are at the site. Water and sewer lines are now being completed. One hundred acres will be devoted to stockyards and the remainder will be devoted to industrial enterprises, buildings to be erected by the stockyards company to suit tenants. Stock pens will be constructed on 6 acres, which will be paved with concrete. There will also be considerable street work, curbs and sidewalks. The administration building will be 2-story, U-shaped, 190 x 150 ft., frame and plaster construction.

Calif., Los Angeles—Terminal—Work will be started within a month on the first unit of a freight terminal for Southern Pacific Railway, covering a 2-mile strip along the San Fernando road extending north from the N. Broadway yards. About 51,000 cu. yd. of grading and 47,000 ft. of track will be involved in the work to be started first. Company contemplates doing the work with its own forces. A 150-ton railway scale will also be installed. The complete project will cover about 7,000 acres and will comprise in addition to tracks, roundhouse, repair shop, water tanks and other appurtenances.

Calif., San Bernardino—Gas Plant Additions—Improvements and additions to cost \$149,000 at Colton plant of Southern California Gas Company were announced by H. C. McAllister, district manager.

Calif., Long Beach—Gas Absorption Plant—Definite plans are announced by George A. Brown, industrial secretary of Long Beach Chamber of Commerce, that Ventura Oil Company will erect a \$300,000 gas absorption plant at Long Beach in the near future. A site has been selected and plans for construction are to be drawn at once.

Colo., Denver—Cable—The Mountain States Telephone and Telegraph Company is extending its underground trunk lines in the business district to provide more adequate service for "Automobile Row." A main cable of 2,424 wires is being installed at a cost of \$40,000.

Calif., San Diego—Speedway—Prince Auto Speedway Construction Company has been awarded contract to construct a \$250,000 speedway for the San Diego Speedway Association. The track, etc., will be a duplicate of the Los Angeles speedway. A. C. Pillsbury Company, Los Angeles, has charge of the engineering work. A. M. Young, managing director of the Beverly Speedway, Los Angeles, is one of the men back of the project.

Ore., Portland—Incinerator—Plans and specifications for a new incinerator unit are now ready and will be submitted to the city council for approval. A \$200,000 fund is on hand to care for the improvement, which is estimated to cost between \$100,000 and \$150,000.

Utah, Salt Lake City—Radiophone—B. W. Dalton of Price, Utah, has been issued a certificate of public convenience and necessity by the public utilities commission of Utah to install a radio telephone service to serve San Juan, Grand, Carbon, Utah and Salt Lake counties. It is understood that Utah is the first state in the Union to grant a radiophone public utility.

Utah, Salt Lake City—Tunnel—The second of the contracts for preliminary work of the Columbia Steel Corporation's activities in Utah provides for the driving of a tunnel and opening up the company's coal deposits in Carbon County. Gibbons & Reid have been awarded the contract. The initial contract for road work was awarded to the Reynolds-Ely Construction Company.

Wash., Bellingham—Port Develop.—The Bellingham Port Commission has decided to submit to the voters on Dec. 2, a comprehensive plan of port development. Four units are proposed in the plan—three in Bellingham and one at Blaine. Details of the plan will be available shortly.

Wash., Tacoma—Port Facilities—The Tacoma Port Commission has awarded to the Colby Steel Engineering Company a contract for two cranes to cost \$43,650. A contract for a monorail system for the new port transit shed was let to Pauling Harnesfager Company of Milwaukee, and will cost \$40,000.

Idaho, Mackay—Mill—Articles of incorporation have been filed in Lemhi County by the Republic Consolidated Mining & Refining Company, with a capitalization of \$3,000,000. A \$150,000 cyanide mill will be built and some hydroelectric development will take place on Patterson Creek.

Nev., Manhattan—Mill—Plans for the erection of a fifty-ton mill are being completed by the Manhattan Consolidated Company. The management states a large tonnage of good ore has been placed in sight and that the outlook is excellent for a profitable season.

Mexico, Tia Juana—Race Track—According to J. W. Coffroth, president of the Tia Juana Jockey Club, a \$1,000,000 racing plant will be established in that city. Ground will be broken Nov. 30. The course will be $1\frac{1}{2}$ mi. in length, and will be modeled after the famous course at Saratoga. The grandstand and clubhouse will be of steel and concrete construction with complete electric lighting system, 1,000 additional stalls, making 2,000 in all. Lewis H. Falk is local publicity director. Mr. Coffroth is at present in New York.

Nev., Winnemucca—Mill—Erection of a 50-ton mill at Unionville by the Unionville Mining Company has been approved by the directors and plans made for the financing of the project.

Ore., The Dalles—Tie Treating Plant—Hedges & Huls, a local contracting firm, has been awarded the contract for building the new tie treating plant here at a figure totaling more than \$100,000, it was announced by J. P. O'Brien, general manager of the O. W. Ry. & N. Co.

Ore., Portland—Pier—On a bid of \$120,234 Telle & Allyn received a contract for the construction of an extension of pier No. 1 at terminal No. 4 by the commission of public docks.

Wash., Spokane—Mills—A project is now afoot to build steel mills and blast furnaces to cost \$12,000,000 near Spokane. H. H. Shallenberger of Spokane states that the Coast Range Steel Corp., Ltd., is promoting the project.

Wash., Hoquiam—Terminals—The first unit of the Grays Harbor terminals was recently dedicated with much ceremony and speech making. The dock, which is 2,000 ft. long and 300 ft. wide, is well equipped for the handling of freight. Behind the dock lies a 300-acre tract reserved for industries.

Wash., Everett—The Whitman County Iron Company at Davenport plans the location in Everett of a 50-ton blast furnace, according to E. G. Hammer, vice-president of the company. The company controls between 10,000,000 and 15,000,000 tons of hematite iron.

Wash., Vancouver—Smelter—The United States Molybdenum Metals Company, Ltd., re-

cently organized by Karl S. Rinehart and H. H. Ward of Portland, has leased the yards of the Standifer Shipbuilding Company, as the site of the proposed smelter and refinery where the ores from the company's mining properties in the Spirit Lake district will be treated. The company will also erect a concentrator at the mine, where the deposit is said to contain 7,000,000 tons of molybdenum ore.

Wash., Spokane—Incinerators—The city council has decided to build two garbage incinerators at a cost of \$35,000.

Wash., Olympia—Stone—The cut stone contract for the walls of the state capitol building in Olympia has been awarded to the Walker Cut Stone Company of Tacoma. The contract is to supply and deliver Wilkeson cut stone for the completion of the walls up to the roof and is made on a unit basis, the price varying per cubic foot with different cutting, but the total amount will be approximately \$200,000.

Buildings (Miscellaneous)

Ariz., Phoenix—Depot—Santa Fe Railway Company is taking bids for erecting a new union depot at Phoenix, Ariz., for Santa Fe and Arizona Eastern Rwy. companies. The waiting room section will be 2-story, 40 x 60 ft., the remainder will be 1-story. It will contain office rooms, freight and express depts., lavatories, ticket offices, etc.; reinforced concrete construction, 475 x 122 ft., plastered exterior, steel roofing, trusses, Mission tile roof, pine trim, quarry tile and cement floors, vitreous tile floor in lavatories, steam heat. There will be a Mission style arcade, 250 ft. long.

Calif., Fresno—Offices—Architect R. F. Felchin, Fresno, has prepared plans for a 10-story reinforced concrete building, 150 x 75 ft., to be erected at J and Tuolumne Sts. for San Joaquin Light & Power Corp. Modern ventilating and heating systems, three elevators, 183 ft. tower for illuminated effect, radio broadcasting station, club rooms, etc., electric sign 120 x 15 ft. Space will be leased to Valley Elec. Supply Co., Fresno City Water Corp., and Midland Counties Service Corp.

Calif., Glendale—Office—Southland Co., 277 No. Central Ave., Glendale, has been awarded a contract at about \$40,000 for erecting a 1-story brick office building, 88 x 120 ft., on east side of Maryland Ave., between Broadway and Wilson Sts., Glendale, for Southern California Gas Company. Plans by G. Lawrence Stimson Company, Pasadena. The building is designed to carry a second story, reinforced concrete, columns and girders, brick walls, stucco and terra cotta front, plate glass, cement floor, metal skylights, marble and tile work, steel sash and doors, gum interior finish.

Calif., Fresno—Hotel—R. F. Felchin Co., and Raphael Lake, assoc., Bank of Italy Bldg., Fresno, are taking segregated bids on the new million dollar Hotel Californian to be erected in Fresno. Plans and specifications are now available. Bids are asked on the following: Millwork; sheet metal work; reinforced steel; roofing; ornamental iron; glass and glazing; metal windows; tile work; marble work; ventilation; heating; plumbing; wiring; sprinkler system; refrigeration; elevators; struc. steel; painting; excavation; tile roofing lathing and plastering. Eight-story and basement, 300 rooms with baths; washed air cooling system, steam heat, hot water, oil burning plant, 2 passenger and 2 freight elevators.

Calif., Wilmington—Bank—First National Bank will start work soon on a 4-story building at Canal Ave. and D St. The building will contain the new bank quarters with offices above.

Calif., Fullerton—Salesrooms—Offices—South & Frangen, Anaheim, were awarded contract at about \$60,000 to erect a brick business building, 2-story, 125 x $52\frac{1}{2}$ ft., at 117-25 W. Commonwealth Ave. for Wickersheim Implement Co.

Concrete foundation, plastered over brick exterior, comp. roofing; salesroom, etc., on ground floor, offices to rent above.

Calif., Glendale—Store—Office—Elmer Elliott, 612 E. Elk Ave., Glendale, has the general contract for erecting a 4-story and basement store and office building at the southwest corner of Brand Blvd. and Wilson St., Glendale, for John Lawson. Alfred F. Priest, 716 Fay Bldg., Los Angeles, architect. H. E. Betz, Glendale, has the contract for brick work; H. P. Siverell, Glendale, has the contract for excavating and concrete work; Tropic Potteries, terra cotta, and Wilson-Bell Co., hardware. The building will cost, complete, about \$186,000.

Calif., Los Angeles—Store—Clinton Construction Company, Stock Exchange Building, has been awarded the general contract at about \$118,000 for erecting a 6-story Class A store and loft building on west side of Broadway near 6th St., for South Broadway Bldg. Co. Edwin Bergstrom, 1128 Citizens National Bank Bldg., architect. Steel frame, brick walls, 40 x 115 ft., terra cotta facing, plate glass, metal frames, elevators, etc. Bids are being taken on sub-contracts.

Calif., Long Beach—Store—Hotel—Architects Aleck Curlett and Claud Beelman, 408 Union Bank Bldg., have prepared preliminary plans for a 13-story class A store and hotel building to be erected at northwest corner of Ocean Blvd. and Elm Ave., Long Beach, for a local syndicate in which Wm. Wrigley is interested. The site is 100 x 155 ft. The building will contain stores in the first story and 30 hotel rooms and baths on each of the upper floors.

Calif., Long Beach—Bank—Architects John Parkinson and Donald B. Parkinson, 420 Title Insurance Bldg., are taking bids on the general contracting for a class A building to be erected at southeast corner of 4th and Pine Sts., Long Beach, for First National Bank of Long Beach. The banking rooms will be 75 x 120 ft., one high story equal to a 3-story building; the remainder, 55 x 75 ft., will be three story; basement under entire building; steel frame, brick and concrete construction, terra cotta facing, granite, plate glass, marble and tile work, bronze work, passenger and service elevators, safe deposit vaults, locker rooms, heating and ventilating plant; \$250,000.

Calif., Los Angeles—School—Milwaukee Building Company, 315 Wright & Callender Building, has completed plans and has the contract at \$180,000 for a 2-story and pt. 3-story class A building at southeast corner of Figueroa St. and Santa Barbara Ave., for Jos. A. Rosenkranz. It will be occupied by L. A. Automotive School. Six stores, garage and lofts, 158 x 146 ft., reinforced concrete and hollow tile construction, plastered exterior, cast stone trim, plate glass, fire escapes, comp. roofing, metal skylights, hollow tile partitions, elevator.

Calif., Bakersfield—Store—William G. Reed, 201 Brock Bldg., Long Beach, has a contract to erect a \$50,000, 2-story, 66 x 115-ft. store building in Bakersfield, for the McMahon Furniture Company of Bakersfield.

Calif., Long Beach—Apartments—Joseph H. Roberts, 213 Marine Bank Bldg., Long Beach, is preparing plans for a \$40,000, 2-story and basement apartment building to be erected in 600 block on E. 1st St., Long Beach; owner's name withheld. Sixty rooms in 24 single and double apartments. Reinforced concrete basement and first story, concrete slab first floor, upper story frame and brick veneer, tile and comp. roof, rug, brick facing, terra cotta trim, tile and marble entrances, hardwood floors, comp. bath floors and drain boards, disappearing beds, reinforced steel, ornamental iron work, exterior lighting fixtures, basement will have auto storage, showers, dressing rooms, hot water plant, incinerator.

Journal of Electricity

and Western Industry

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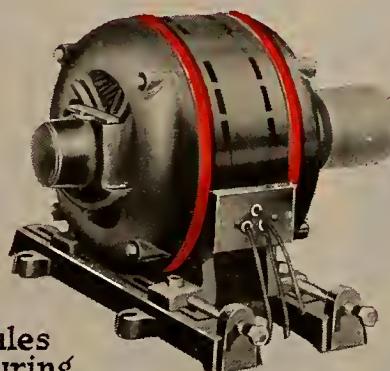
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San Francisco

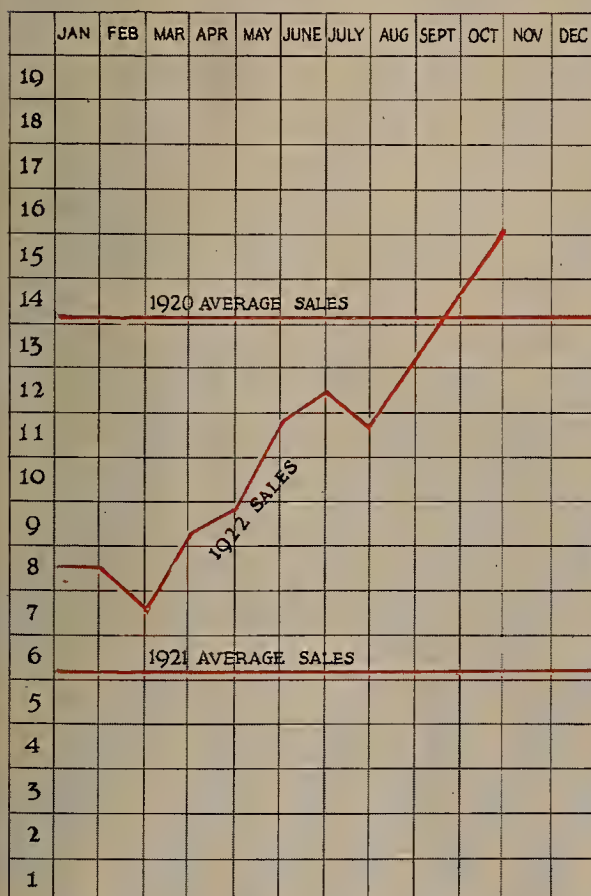


Sales
During
October 1921

Comparison of sales
in October 1921 and
1922 is represented
by the two Howell
Red Band Motors—



Sales
During
October 1922



Sales Volume 3 Times Greater Than Year Ago

*Howell Red Band Motor Business Increases
300 Per Cent over October 1921, in Spite
of Price Reduction of Nearly 40 Per Cent*

More Red Band Motors are being built today than any other time in the history of the Howell Electric Motors Company.

The chart to the left shows the steady increase in sales during the last ten months and demonstrates conclusively that Howell Red Band Motors have made good on the hard jobs because—

Howell Red Band Motors usually are placed in service where the operating conditions are particularly severe.

More than half the Howell Red Band Motor sales during 1922 have been repeat orders to industrial concerns, railroads and manufacturers who have demonstrated to their complete satisfaction the true worth of Howell Motors in actual service.

If you have a particularly hard job, give it to a Howell Red Band Motor—standard 40° rating with overload capacity.

Howell Electric Motors Company
Howell, Michigan

Sales and Service Representatives in all Principal Cities

(40)

Howell RED BAND ELECTRIC Motors

Make Good On The Hard Jobs



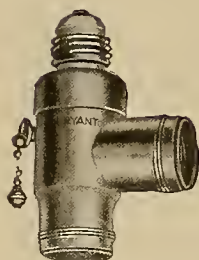
Take a tip from the waiter!

When you buy pie at a restaurant you are quite apt to buy pie a la mode.

The waiter suggests "a la mode" when you say "Pie." He knows you probably like it and the restaurant makes a big profit on the ice cream. That makes him solid with the boss.

You, the Electrical Merchant, can do the same thing. Whenever you sell a household appliance—lamp, iron, toaster, grill, washer, cleaner—suggest to your customer the use of a Bryant Dubl-duty socket or a Bryant No. 651 Appliance Switch Plug, or a Bryant KE Pilot-cap. Your customer probably needs a number of these accessories and you can make a clean profit on the sales.

Don't pass this up. Your business needs profits as much as the restaurant and you certainly are as keen a salesman as a waiter.



BRYANT
Dubl-Duty Socket
\$1.35



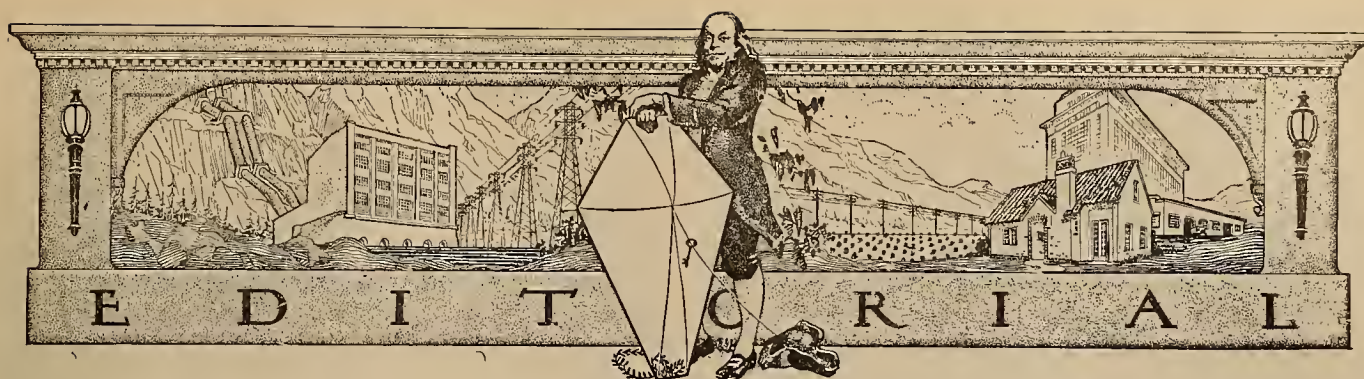
BRYANT
Spar-Tap Socket
\$1.00



BRYANT
No. KE \$0.95



BRYANT
No. 651 \$1.00



Need For Simplified Rates

THERE is one thing that the recent campaign against the Water and Power Act in California brought out most emphatically and that is a need for a simplified rate schedule. Time and again the public mind became confused by the various voluminous rate schedules that were quoted to them.

BROADLY speaking, there is need only for four fundamental rates: a rate for agriculture, a rate for industry, a rate for lighting, and a rate for cooking and household uses. It is to be admitted that refined engineering and technical research can be brought to bear to show that the rate situation is far more complicated than this, yet it is believed that the sacrifice of much of this refinement for simplification of the rate schedule will do much towards a better understanding on the part of the public of the great problem of electric power distribution.

IT IS easy for any person with only a modicum of business sense to follow the basic law, that total income from a public utility must be sufficient to pay the cost of service; and that this cost includes a reasonable return on the money invested. The general understanding of the basic principles of utility service will increase in direct ratio to the simplification of rates. The result will be a greater sympathetic understanding on the part of the public and the establishment of a confidence in those handling the affairs of a utility, impregnable to the onslaughts of the demagogue.

A COMMITTEE has been appointed by the California Electrical Cooperative Campaign to memorialize the California Railroad Commission on this very subject, and it is believed that similar movements in other commonwealths of the West may be undertaken with profit.

The Electrical Equipping of Public School Buildings

THE fact that there is an investment of huge proportions going into the various new public school buildings throughout the West, makes the proper electrical equipping of these school buildings of major importance at the present time. Instances of the proportions in which building of this nature is under way are shown in the program of Los Angeles for new school buildings for the year 1923 totaling the sum of \$17,000,000, and of San Francisco for \$12,000,000. In Seattle, Portland, Spokane, Denver and other cities of the West proportionate amounts have been allowed in the budgets for the coming year.

The way to sell the electrical idea to the schools is to begin at the top and work down. First, the Board of Education should be approached and the electrical idea sold to them, also its importance in the future of the West. In certain districts this importance is more emphatic than in others. In California, for instance, it is estimated that the present fuel supply will have been exhausted within the next twenty-five or thirty years. The use of electricity may as a consequence become imperative as the years roll on. Having won the favorable opinion of the Board of Education, the next move is to invite the domestic science teaching force to an electrically cooked dinner. In some cities this may involve the entertainment of three or four hundred teachers, but the end to be obtained is well worth the effort involved.

It is practically impossible to completely put over the electrical idea to a domestic science teaching force, much less carry on proper instruction in electrical methods, unless the building itself is properly wired and equipped for the use of modern electric appliances. The time to do all this is when the building is being constructed.

Engineering Qualifications Not the Only Ones for Utility Commissioners

THERE are a number of vacancies on the various utility regulatory bodies of the West which must shortly be filled. Within the next two months there will be three vacancies on the California State Railroad Commission, to be filled either by the incumbent governor or the man who will take his place. One vacancy was created by the death of one of the members, a second member has announced his intention of resigning, while the term of a third will shortly expire.

There is a movement on foot to have at least two of these vacancies filled by engineers on the ground that the work of the commission is of such a nature that the engineer is the ideal man for the position. In an article in the November issue of the *Pacific Engineer* attention is called to the situation which existed two years ago, when a survey of the membership of the public utility commissions of the various states of the Union showed that out of a total membership of 167 but 5 were engineers, and the recommendation is made that the engineers of

California take steps to remedy the situation in their own state.

To contend that a man be placed upon a public utility board merely because he is an engineer is arguing from a wrong hypothesis. It is true that such a body deals with engineering matters to a certain extent and that engineering training would be of considerable value to its members. On the other hand, the duties of such bodies are primarily judicial. Their organization is such that they may employ the best engineering talent available to prepare data for their hearings. In addition to supervising the operations of the electric public utilities of the state, the California Commission regulates the operations of the telephone companies, the intra-state and inter-urban railroads, the motor transportation lines, water companies and all other public utilities.

The ideal commissioner must be honest and sincere, he must possess integrity, he must have a knowledge of the law, a knowledge of business, and above all he must be an able and competent judge. There are a number of men in the engineering profession in the West who possess all of the above qualifications and who would be ably fitted to sit as members upon any of the utility regulatory bodies. Nevertheless, to recommend that such men be appointed merely because they are engineers is exceeding the bounds of sound reasoning. Before recommending any man for the position of California State Railroad Commissioner it will be well to take all of these facts into consideration.

Should the Public Be Expected to Do as We Say and Not as We Do?

ONE would be justified in being skeptical about buying hair tonic from a bald-headed barber, also about patronizing the restaurant whose proprietor ate across the street. Yet the percentage of domestic electric appliances in use among members of the electrical industry, as shown by questionnaires from several representative bodies of men, is surprisingly low. How can a man sell an appliance with conviction and sincerity unless he knows from experience that he is right? Can the public be criticized for hesitating in the electrification of its homes when only two central station executives in the entire West live in electric homes?

The era of domestic electrification would be tremendously hastened if those engaged in merchandising, or manufacturing electric appliances or in producing energy, could look a doubting customer squarely in the eye and truthfully say, "I know it is true, I use one myself."

The time has come when men of the electrical industry themselves must set the example of faith in electrical household appliances. It is true that there are many reasons why more electrical men do not themselves use these household appliances in their own homes, but the fact remains that if we are to enter upon the tremendous new field of opportunity before us we of the industry ourselves must make personal sacrifice, if necessary, to see that things are done the electrical way in the home. This means, of

course, that friend wife must be taken into our confidence.

There is a movement on between two of the great weekly electrical luncheon clubs in the West to encourage the use of electrical household appliances by electrical men. To this end a contest is to be staged between the two entitled "The Supremacy of the Kilowatt." The procedure will be something as follows: At meetings of the two clubs the electric range, the electric water heater, the vacuum cleaner and other household appliances will be shown in detail and their uses and economies explained. Then the wives of members will be invited to subsequent meetings and the same program will be gone into with much more detail.

A feature of the contest will be a graphic representation showing the new kilowatts that have been put on the line by the purchase of household electric appliances in the various homes of the members. At the end of an agreed upon period the club having the highest new kilowatt connected load will be said to have won the kilowatt supremacy and an electric range will be given by one of the manufacturers as a prize.

Here is the beginning of a new idea. The encouragement of the use of household electrical appliances in the home by members themselves is the only way that the ultimate ideal of the home electric is to be put over. Members of the industry throughout the West are urged to back similar moves as that outlined above, wherein the supremacy of the kilowatt in the home is given every emphasis.

Results of Colorado Conference

Vital to Western Development

ALMOST two years have passed since the development of the Colorado River has been occupying a prominent position in the press and has loomed large in the public eye. At the time this is written a conference is being held in Santa Fe at which it is hoped final adjudication of many conflicting claims will be made. It is imperative that the utilization of this great stream be started at the earliest possible moment.

A year has slipped by since a substantial offer was made at the Riverside convention of representatives from all sections of the Southwest, to the extent of \$30,000,000 per year in actual construction, should private initiative be allowed to get under way in this development. How much further delay will take place no one knows, but we do know that no one at the present time is urging anything but safe and sane development of the Colorado under the most scrutinizing supervision of the federal and state government, and that every safeguard be employed to see that this great work proceed in such a way that the most economic development take place.

This annual outlay of \$30,000,000, the investment of which has thus far been delayed, would develop approximately 100,000 horsepower, and 100,000 horsepower means the employment of 1,300 people in new electrical industries in the West with a salary payroll of \$2,000,000 annually. It means the fur-

nishing of electricity to an additional 25,000 new homes serving 100,000 new people. It means the operation of mines and reduction plants producing \$18,000,000 of mineral annually and employing 4,000 miners. It means the operation of 1,300 factories representing \$100,000,000 in investment, employing 27,000 persons, and producing \$140,000,000 worth of goods annually. It means the irrigation of 125,000 acres of land, resulting in the expenditure of \$6,250,000 for improvements, producing annually \$9,500,000 worth of crops and employing 5,000 farmers and laborers.

So reads the record of the past in the development of each unit of 100,000 horsepower, and with the growth in population that is now under way in the Southwest, it means at least this for the future. The answer, then, is clear. Every provision should be made for complete development and, having applied every reasonable safeguard for public interest, nothing should be allowed to further delay the unlocking of these great gigantic resources for the upbuilding of the West.

Profit Is a Factor Which

Cannot Be Eliminated from Industry

CHARLES R. GOW, president of the Associated Industries of Massachusetts, in a weekly journal addressed to members of his association, has expressed some ideas which are deserving of wider circulation. His message entitled "The Philosophy of Profit" follows:

"Leaders of radical thought usually assert that all production is the fruit solely of the wage worker's toil and that, therefore, profit in industry is morally indefensible.

"The fallacy in this reasoning lies in the obvious fact that workers in modern industry can produce nothing until some one has first supplied them with the necessary tools and facilities required for their several operations. Even then production can only result under the proper direction of experienced management capable of intelligently co-ordinating the varied abilities of the individual employees.

"In the days when man lived a primitive existence, he retained for his own benefit the entire productive result of his labor, but it should be noted that under such conditions he was frequently subjected to extreme privation and suffering owing to the meager return which oftentimes attended his efforts.

"From the time when men first conceived the principle of the division of labor, which has made possible the advancement of civilization to its present status, the individual worker has been obliged to contribute a portion of the value of his production to those who have assisted him to prosper beyond the limits of his own unaided ability.

"It is a most significant fact that every experimental effort which has ever been undertaken to eliminate all profit from industry and to appropriate to the individual worker the entire value of the output of his labor, has resulted in an involuntary return to a social condition approximating the primitive state of mankind."

CURRENT COMMENT



The management of the principal railways of the United States today, by all the tests of administration, of load factors and of mechanical efficiency, is the most efficient

U. S. Railroads Most Efficient in the World

transportation in the world in so far as it is not limited by causes beyond the managers' control, according to the annual report of the Secretary of Commerce for the fiscal year 1921-1922 which has just been made public. While the transportation facilities have seemingly lagged behind the necessities of the country, the demoralization of the war, strikes, lack of finances and other causes beyond the control of the executives have been largely responsible.

The report of the Secretary of Commerce, while discussing the railways, justifies the principle of the operation of utilities by private initiative under public regulation when it says:

"The situation has been contributed to by the war, but also fundamentally by the cumulation of experiments in public relations to the railways, both national and state. We have tried uncontrolled operation; we have tried negative regulation in the prevention of discrimination; we have tried nationalization; we are now trying positive regulation. Nationalization would be a social and economic disaster; free operation would reconstruct the vicious practices of 30 years ago. Regulation in some form is necessary, but constructive development of this regulation—to preserve the initiative and responsibility of our railway executives, to secure the fine values of private operation, and at the same time to secure public protection and assure adequate service, is absolutely vital and not necessarily incompatible."

Tests conducted at the experimental coal mine of the Bureau of Mines at Bruceton, Pa., hold out the hope that wireless waves may be used in the future

Wireless May Be Used in Mine Rescues

as a means of effective communication between rescuers on the surface and miners entombed in mines following fires and explosions such as the recent Argonaut disaster in California. These preliminary experiments of the Bureau of Mines, made in cooperation with the Westinghouse Electric & Manufacturing Company, while failing to develop any practical method of using wireless waves for underground communication, nevertheless indicate clearly that

electromagnetic waves may be made to travel through solid strata. In the Bruceton experiments, signals were heard distinctly through fifty feet of coal strata, although the audibility fell off rapidly as this distance was increased. The absorption or loss of intensity with distance is very great for the short wave lengths used in these tests.

Longer wave lengths are known to suffer less absorption and may possibly be found practically effective under certain conditions.

The mine telephone has been perfected to such an extent that it is giving satisfaction in most mines where the wiring is well insulated. Very often the telephone cannot be depended upon on account of falls of rock, grounding due to worn insulation or extreme dampness. In the event of a disaster it frequently happens that the mine telephone system is put out of commission by the agency that causes the disaster, at the time when it is most urgently needed. On this account the mining industry is interested in any kind of telephone system that can be counted upon in an emergency. Many requests have been received by the Bureau of Mines to devise means of utilizing wireless methods for this purpose.

What "Denkinotomo," the electrical trade paper of Japan, characterizes as drastic rate reductions, have been put into effect in the principal cities of that

Electric Rates in Japan Are Reduced

country through a recent order of the Department of Communications. The reduction in rates has been brought about by a decrease in practically all commodities. The new rates form an interesting basis for comparison with power and lighting rates in the United States. In the new schedule power rates run from 2.5 to 4 cents per kw-hr., while lighting rates are computed on the basis of 27.5 to 44.5 cents per 16 cp. lamp per month. The following table gives the old and the new rates for some of the more important cities in the country:

City	Old rate lighting	New rate	Old rate power	New rate
Osaka	62	55	8.5	7.0
Kyoto	96	89	8.5	7.5
Kobe	94	80	8.0	6.5
Yokohama	72	65	10.0	8.0
Hiroshima	75-105	75	4.5-7.5	5.0

The figures are given in sen, equivalent to one-half cent.

The rate reductions do not apply to Tokyo, where no increases were made during the war.

The future extensive development of a substantial coal-mining industry in the public land areas of western states is forecast in statistics compiled by the Federal Bureau of Mines which show that up to Oct. 1, the bureau had issued 263 permits for prospecting for coal on government lands, 42 leases for commercial coal operations on these lands, and 5 licenses for production of coal limited to personal use. These authorizations are grouped by states as follows:

	Permits	Leases	Licenses
California	2	..	..
Colorado	51	6	2
Idaho	4	..	..
Montana	36	2	1
Nevada	14	..	..
New Mexico	13	2	..
North Dakota	4	5	..
Oregon	19	..	..
South Dakota	3	1	1
Utah	27	15	..
Washington	14	2	..
Wyoming	76	9	1

The total minimum annual production of coal required in the issuance of these various authorizations is 1,586,550 tons, which is approximately equivalent to the total annual coal production of Michigan and which approaches the yearly coal production of Arkansas or Texas. The total investment to be expended on leases amounts to \$2,453,550.

A total of 228,224 acres of the public domain is covered by permits for coal prospecting issued by the Bureau of Mines; for coal leases, 26,910 acres are covered, and for coal licenses 220 acres.

Up to Oct. 1, four potash development leases had been granted, covering 7,343 acres; 11 potash permits, involving 28,000 acres, had been granted. One oil shale lease, covering 1,920 acres, and 1 rock phosphate lease covering 360 acres, have been issued by the Bureau of Mines.

Application for government sanction to establish a wireless telephone system has been made by the Daido Electric Power Company, of Nagoya, Japan, according to advices received by the Department of Commerce.

Power Company The company proposes to operate
Wireless System this wireless system primarily
Planned in Japan for its own convenience in connecting the various stations with its electric light and power system, but its use may be extended eventually to the general public if sufficient demand should arise.

As at present planned the wireless system will start from Okuwa in Nagano Prefecture on the Central Japan Railway Line, from which point communication will be established through Nagoya and as far as Osaka, a distance of about 150 miles.

This power company has an extended distributing area, its principal sources of energy being hydro-electric plants located in the mountainous regions. Due to the general absence of telephone and telegraph lines, the radio telephone will probably facilitate communication to a great extent.

DISCUSSION

Interview with W. S. Murray on Railway Electrification in the West

By Robert Sibley

William S. Murray, prominent consulting engineer of New York, who is well known for his work in connection with the electrification of the New York, New Haven and Hartford Railway, the Super-power Survey, and the Murray and Flood Report on the Hydro Electric Commission operations in Ontario, Canada, has recently completed a tour of the Pacific Coast, during which he visited many of the hydroelectric developments in this area.

The thought that the views of a man of such unquestionable authority would prove interesting to western men, prompted the following interview on railway electrification. Electrification of the steam railroads will become increasingly important as the future unfolds. Mr. Murray is of the opinion that the electrification of the railroads of the West is practicable and feasible at the present time, due to the present interconnected transmission systems and initiative of the power companies, which have removed many of the obstacles.

The interview follows:

I understand, Mr. Murray, that the investigation known as the Super-power Survey, of which you served as chairman, was undertaken to study the economies that may be brought about by interconnecting certain of the present power systems in a zone extending from Boston to Washington and westward from the Atlantic coast 150 miles. In your observations in California and the West, what comparisons would you make as to what you saw here already existent in a super-power system as compared with your proposed system in the East?

During the last five weeks I have been in California and had opportunity to study the territory, its peoples and the power and distribution problem, both in the north and south parts of the state. Your question suggests a very interesting comparison. In the eastern zone you have described there dwells 25 per cent of the population of the country, approximately twenty-five million people. The area of that zone is 60,000 square miles, its heavy railroad mileage, 36,000; there are 76,000 industries and of public utility companies, 350 in number, which include 550 power stations. The electrical demand for power in that zone as of 1919 was approximately 4,000,000 kw. and energy demand, 16,000,000,000 kw-hr. By projecting electric utility load curves, it is indicated that as of 1930 the electrical demand will be 10,000,000 kw. and the energy demand 31,000,000,000 kw-hr. In 1930 all new industry will be electrically operated and much

of the old electrified, and a very considerable tonnage will be moved electrically on the heavy traction railroads. This is the present and future situation in the eastern super-power zone.

In California I find you have a population of approximately 4,000,000 and a natural source of water power unexampled in the East. It might be of interest to know that taking advantage of the entire head between Lake Erie and Lake Ontario, if every second-foot at Niagara Falls was turned into power, leaving the crests of the natural dams at Niagara dry, California has within transmission distance of her future industrial development power in excess of this amount. I would supplement this, also, with the statement that during the five weeks I have spent in California I have had opportunity to examine some of the principal present and future hydroelectric features both in the north and south sections of the state. In the north I refer to the Pit River developments, in the south to the Big Creek development. It is apparent that in the construction undertaken in these two districts, the highest order of efficiency in the production of power has been in the minds of the engineering and managerial departments of your public utilities. Here I have seen illustrated a slogan which every engineer should follow, namely, that good engineering is the art of making a dollar earn the greatest interest.

Passing into the field of transmission and distribution, I have toured a very large section of the country with the objective of ascertaining the method pursued in the transmission and distribution of power to customers in all classes—manufacturing, mining, agricultural, commercial and domestic. I have found a foundation of power laid with a super-structure of transmission and distribution upon it designed so that the immediate demands of the peoples in the above classes can be met, but so fashioned as to permit instant and efficient expansion to their ever rapid and increasing requirements. Therefore, in answer to your question, having described the conditions in the East and the West, it can be said that you have already possessed yourselves in the West of a super-power system the general characteristics of which we will require in the East.

In view of the fact, Mr. Murray, that we have existing here in the West this super-power system that you have just described, do you see the possibilities of steam railway electrification in California?

I certainly do.

What are some of the general economies that prevail in railway electrification?

Density of traffic is the controlling economic feature of railway electrification and density of traffic may be split up into three economic features—the saving of fuel, lower maintenance costs of electric motive power, and consolidation of trains which permits of a saving in train miles.

I understand, Mr. Murray, that you had a substantial part in the electrification of the New York, New Haven & Hartford Railway. Would you mind telling me some of the economies brought out in that electrification?

The principal economies effected in the electrification of the New Haven lines were in the three departments I have just mentioned. The fuel consumed for the train schedule performed in the three classes of service, freight, passenger and switching, was 50 per cent, locomotive repairs, about 50 per cent, and at the time I was in charge of the New Haven electrification, the return on the net economic investment for the electrification was on the order of 14 per cent.

Why is it then that all steam railways of America do not electrify at once?

There are a number of reasons, three principal ones of which are—first, that there has been so much discussion between the electric companies regarding the system that should be used. When the management of a railroad is in the frame of mind to consider electrification, that frame of mind has been discouraged by the two large manufacturing interests upon request for bids to insist on the application of the system that they advocate and make claims against the system being advocated by the other. The management concludes, therefore, that if the large electrical companies cannot agree as to system, it would be dangerous to electrify.

The second difficulty is that in the immediate past the railroads have been so seriously embarrassed financially that even had there been unanimity of opinion as regards system, but a few could have electrified.

The third reason might be laid to the fact that the railroads have been approached from the wrong angle. In my opinion the management of railroads has not been properly educated by the interests who desire to sell electrification to them. The approach has been made through the doors of the financial department or in the executive chambers of the railroad corporation. It would be a far healthier aspect if the management could be convinced that electrification is the proper procedure and have them carry it to such executives. Thus there would be an acceptance of responsibility on the part of the management. Per contra, if electrification is sold to the executive and financial officers of the road, the management is not responsible for results. For illustration: The electrical engineering department of a railroad might show the cost of the electrification of a grade to be \$9,000,000 and a return on that money so spent to the extent of 10 or 15 per cent, possibly 20 per cent, and further than that, show by electric operation over the same rails a created capacity of 50 per cent in excess of that secured in steam railway operation. Then the first question the management asks of the electrical engineer, notwithstanding these economies and increase of capacity, is "How much will it cost to lay down another track?" and when the electrical engineer, after consulting the chief engineer of the railroad, finds that this will also cost \$9,000,000, profits and increase of capacity through electrification are forgotten by the management in the thought that there is an extra set of rails to take care of trouble that might exist

on the other. Just so long as this wrong state of mind exists, electrification will be delayed, and yet I say it is the duty of the electrical engineer to educate the management first.

Mr. Murray, referring again to this super-power situation in California, isn't it true that some of this enormous additional investment necessary for railway electrification can be done away with, due to the fact that power lines are already existent to supply this power?

That is a very important question, Mr. Sibley. I am glad to answer it this way. In the early days of electrification the railroad company had to make investment to the extent of 100 per cent. It had to finance its power stations, its equipment, its transmission and contact lines. Today that 100 per cent is reduced to possibly 20 per cent. Today the public electric utilities with their tremendous investment in power stations and distributed location are ready to furnish power necessary to electric movement of trains, and as the future will unquestionably see a drawing together of standards in electric motive power for the propulsion of freight, passenger, suburban and switch movements, there will be an equipment designed operative upon the various railway properties. This will permit financing the motive power on an equipment trust basis. Relieving therefore the railroads of the financing of their power stations and their motive power, there will remain only the contact lines to be financed which represents about 20 to 25 per cent of the whole.

My understanding is that practically all of the electrification connected with the New York, New Haven & Hartford lines was on comparatively level ground. In California the situation is quite different. For instance, we have the climb known as the Tehachapi Pass between San Francisco and Los Angeles, the crossing of the Sierras out from Roseville over to Sparks, Nev., and the climb of the Siskiyou from Gerber, Calif., on over into Ashland, Ore. Such climbs as these necessitate gigantic power in comparison with the comparatively low power requirements of the great valleys below. Do you think that this situation will hasten the day of railway electrification or will retard it, and why?

I most certainly think it will be hastened—first, because this super-power structure you have already erected will be the means of supplying power where it is required for the railroads. Highest economy is shown in the matter of electrification when applied to grades. This must be apparent to any casual observer in noticing sometimes five steam locomotives hooked together carrying a train over a summit where an electric locomotive, with possibly one pusher, can perform the work at better schedule, and while regenerative braking on these grades is advantageous from a point of conservation of power, its highest value is secured in the safety of operation and the enormous saving on the wear and tear on brake gear.

Is the scrapping of the present locomotive equipment a deterrent factor in railroad electrification generally?

There is no such thing, because immediately a division is electrified the steam locomotives that originally operated on that division are transferred

to others. A railroad is constantly purchasing new locomotives to cover their depreciation schedule and the locomotives so transferred merely take the place of new ones which otherwise would have been purchased. You, of course, understand that if we started out to electrify all the railroads it would take many years to accomplish it. The number of steam locomotives replaced by the electric locomotives would be constantly used for replacement on other lines.

I have heard it said, Mr. Murray, that there is not sufficient power in California to completely electrify the Southern Pacific and Santa Fe lines within the borders of California. What is your opinion about that?

In answer to that question, Mr. Sibley, I happen to know what the schedule is for increasing the capacity of the electrical generating plants in California and I can say to you, with the full consciousness that it is a fact, that I do not believe it would be modified to any great extent by the amount of power required to operate all of the heavy traction roads in your state.

I have also heard it said, Mr. Murray, that the sudden stopping and starting of the great transcontinental freighters would interject upon a power system such sudden demands for power that the voltage regulation and other operating features might become seriously demoralized. What is your opinion about that?

My answer to that, Mr. Sibley, is that if I were dictating the policy of the sale of electricity to the steam railroads to be electrified in California I would offer them that power with no charge for demand. I would sell it purely upon the kilowatt-hour basis.

In round numbers, Mr. Murray, have you any idea as to the amount of money that would be required to do this big job of electrification in California?

I do not know what the heavy traction mileage is in California that could be economically electrified, but I think it is safe to say that the contact systems which the railroads would require would cost on the average of about \$10,000 a mile as measured upon a single track basis. Similarly, not having examined the railroad schedule performed, it would be impossible to state the motive power investment required. The motive power, however, I believe could be entirely financed by equipment trust bonds, thus relieving the railroads of that burden of expense.

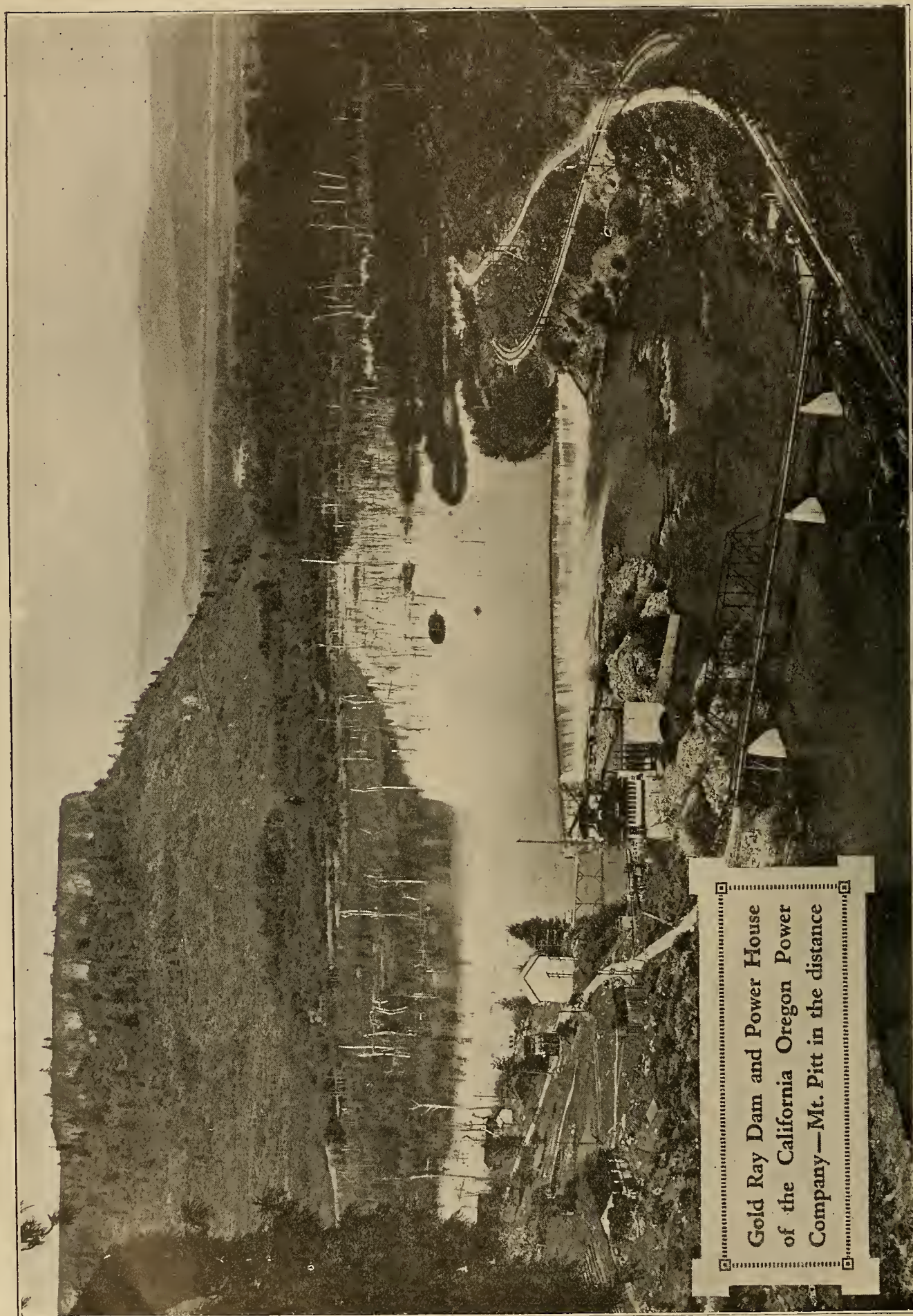
Then I understand, Mr. Murray, that your thought is that in this electrification era, which will probably be upon us in the immediate years ahead, that the railroads themselves will largely be relieved of the financing necessary for the power supply and for the rolling stock equipment, leaving for them alone the contact work.

That is what I hope for very much and is the objective toward which I have been working for many years.

I suppose that there could be no separate financing brought about for the handling of the contact work, that the railroads themselves will have to do that.

I would think that the better plan, since the cost is so minor, that the railroads themselves should finance this item.

Thank you, Mr. Murray.



Gold Ray Dam and Power House
of the California Oregon Power
Company—Mt. Pitt in the distance

Building a Rural Load



BY W. M. SHEPARD

THE California Oregon Power Company serves a territory in northern California and southern Oregon, extending from Delta in Shasta County, Calif., where its lines connect with those of the Pacific Gas & Electric Company, and from Trinity Center in Trinity County, Calif., northward something like three hundred miles to Springfield, Ore., where its system will connect with that of The Mountain States Power Company, serving the Willamette Valley as far north as the town of Dallas, Ore.

The company distributes electric power over a wide and sparsely settled territory, mountainous in character, but with several fertile and extensive valleys, which constitute the centers of population.

There are the Shasta and Scott Valleys in California and the Rogue River Valley and Klamath Basin in Oregon. The principal agricultural products of these valleys are fruit, the Rogue River Valley being famous for its pears and apples, dairy products, alfalfa, and diversified farm products.

In the northern California section, or Siskiyou division, and in the Klamath Falls region, cattle and sheep raising is one of the principal activities and large numbers of cattle and sheep are raised and fattened here and shipped to outside markets each year.

The intervening mountainous country is heavily timbered; the timber resources constituting one of the region's principal sources of present and future wealth.

The commercial timber of this region consists

HOW The California Oregon Power Company has developed the intensive use of electricity in a wide and sparsely settled territory, increasing its peak load 150 per cent in five years. Mr. Shepard is general agent for the company at Medford.

mainly of western yellow pine, sugar pine and Douglas fir. There are also large areas of white fir. It is claimed that the pine forests tributary to Klamath Falls constitute the largest body of yellow pine still standing in the United States.

It is truly beautiful timber and in some sections has almost the appearance of a

park with practically no underbrush and with the tall, straight, clean looking pines spaced at almost regular intervals, their reddish-yellow bark standing out in pleasing contrast to the green foliage.

Power Supply Is Ample

With respect to power supply, the company is admirably situated, having modern hydroelectric plants, together with undeveloped power sites on both the Klamath and Rogue rivers. Both of these streams are characterized by remarkable uniformity of flow throughout the year and lend themselves to economical power development.

The Klamath River is one of the few streams on the Pacific Coast that breaks across the mountain barrier from east to west. It has its source in the plateau region east of the Cascade Mountains in Oregon and from streams draining the eastern slope of these mountains.

The region from which it derives its principal water supply is of geologically recent formation and abounds in lava fields. The streams in this region are largely fed from springs, the summer flow being well maintained on account of the porous nature of the country. The Klamath River drops some forty-two hundred feet from the outlet of the Upper Klam-

ath Lake to the Pacific Ocean, having thus a large amount of potential power.

The Rogue River has characteristics very similar to the Klamath River. It has its source on the western slope of the Cascade Mountains and north of the Siskiyou range.

The excellent water characteristics of these two streams, together with the accessibility of the company's power sites, and the fact that at these sites the power developments can be made without conveying the water through great distances, makes for economical power development.

The company operates without any steam plants whatsoever and is enabled to do this on account of the exceptional water characteristics of its power streams, together with the strategic location of its hydroelectric plants, seven in number, which are so located on the system as to give duplicate sources of power supply to almost every section.

The company has never faced a power shortage; its problem has always been to find markets and to this end, in addition to finding outlets beyond the limits of its own territory through interconnections with other power companies, it has directed its efforts toward developing the intensive use of electric power within its own sphere of distribution.

Business Growth — 1916 to 1921

From 1910 to 1920 the population of the territory served by the company's system increased from 60,569 to 77,663, or 28 per cent. It is estimated that between 1916 and 1921, the period now being considered with reference to growth of load, the population increased between fifteen and twenty per cent. During this same period the number of electric con-

sumers increased from 7,478 to 9,775, or 31 per cent. The peak load on the system increased from 8,300 kw. to 21,000 kw., or 150 per cent, and the kw-hr. generated from 42,000,000 to 130,000,000, or 210 per cent.

The connected load in the same period has grown from approximately 15,000 kw. in 1916 to 38,000 kw. in 1921, an increase of 153 per cent.

An idea of where this load has been developed is obtained by a comparison with some of the main classifications as follows:

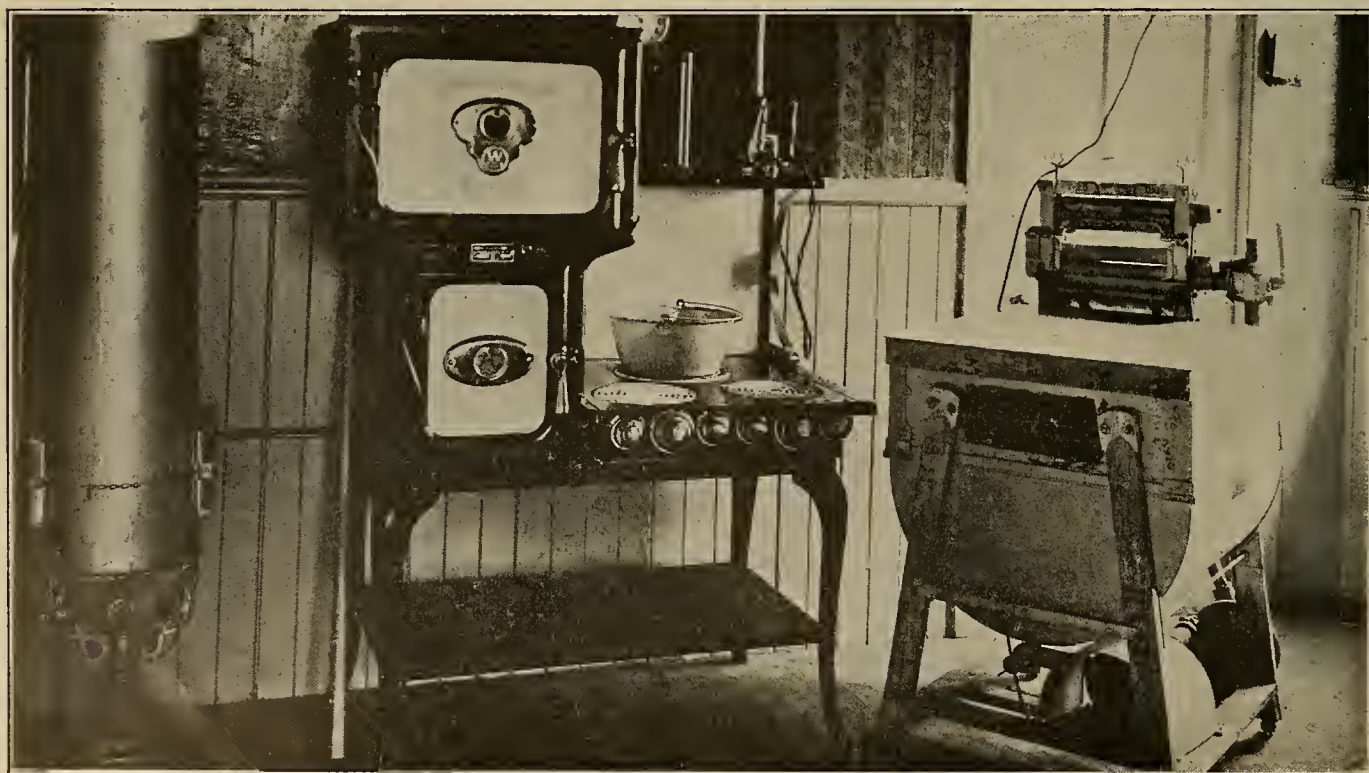
Class of Load	Connected Load in Kw.		
	1916	1921	Increase
Residential, including light and cooking.....	3,760	9,936	164%
Commercial lighting	1,471	1,802	22.5%
Industrial power	6,210	11,521	85.5%
Agricultural power	752	4,779	535%
Other, including Pacific Gas & Electric.....	2,800	10,000	260%

Residential Business Growth

It will be noted that the residential business has increased in far greater ratio than the population or number of consumers. This is due to the development of the electric cooking and water heating load and the use of electric appliances in the home.

In the development of this class of business the company has worked in close cooperation with the contractor-dealers in its territory and it is fortunate in having a number of enterprising and substantial contractor-dealers with whom to cooperate.

The company has made it a practice to route this business through the contractor-dealer, both the sale of range and water heater and the wiring for same. Also, the servicing of this equipment is now taken care of by the dealers without expense to the power company and this has been done for several years now with entirely satisfactory results.



A typical rural installation in the home of Wm. Bohnert near Central Point, Oregon, consisting of electric water heater, range and washing machine



Home and outbuildings on ranch of Wm. Bohnert, typical of the class of rural consumers served with "Copco" power

In getting this business under way, the company entered the field directly, selling the equipment and at first installing same, but as the business gathered headway, and as the contractor-dealers developed to the point of actively going after the development of this business, the company gradually stepped out of the way in their favor. It did this first by maintaining prices so that the dealers could make a fair profit, and then by withdrawing entirely from the field in favor of the dealers as they demonstrated their ability and willingness to actively handle the business.

The company contents itself now with putting on periodic range campaigns in which it works through the dealers, purchasing ranges in carload lots and turning them over to the dealers practically at cost, the dealers selling at a fixed retail price, both the company and dealers advertising and cooperating with the manufacturers in putting on demonstrations.

The cooking and water heating business has developed to a greater extent in the Rogue River Valley than in the other territory covered by the company's operations. In the Rogue River division there are approximately 1,000 domestic electric ranges in use out of a total of 4,400 residential customers, or a saturation of over 22 per cent.

The saturation in the Klamath division is 10 per cent and in the Siskiyou, or California division, 5 per cent. In the Rogue River division conditions are more favorable to the development of electric cooking than in the other two divisions, the climate is milder and there is a larger urban population.

Commercial Heating and Cooking

The company has also developed a considerable business in commercial heating and cooking. Of course, there is not the diversified use of heat in manufacturing or industrial processes that exists in the larger cities and the company has had to confine its efforts largely to hotels, restaurants, clubs, and bakeries, and to water heating for various purposes, such as barber shops. A very substantial load has

been developed from these various uses. The advantages of electricity as a source of heat sometimes come out in a way not altogether expected—for instance, the Shasta Springs Hotel Company has equipped its cottages with 1,500-watt radiant air heaters, not only for the comfort and convenience of its guests during the ordinary season, but also in order to enable it to open earlier and close later, or to get a longer season. Due to the cleanliness, convenience, and comfort of electric heat, it can be used in resorts of this kind where other forms of heat would be out of place.

The company has been quite successful in introducing electricity into restaurants and bakeries and has on file unsolicited letters from consumers expressing their satisfaction with electric ovens and the service received.

Industrial Power Load

The industrial power load has been developed by unrelenting pursuit of all available business, including sawmills and box factories. This latter load is difficult to secure, inasmuch as large amounts of refuse fuel are produced as a by-product, and, ordinarily, unless this is burned to produce steam power, its disposition becomes a source of expense.

It has been our experience that mill operators are at first doubtful of the desirability of central station power for their uses. They are as a rule used to having a self-contained plant and look upon the use of mill refuse for the generation of power as the natural and obvious thing to do. It is also difficult to bring home to them a realization of the true cost of generating power from mill refuse.

However, consistent effort on the part of the power companies, together with their own experience or that of other mill operators using central station power, will eventually convince most operators of the merits of central station service. This is particularly true of the small or moderate size operation, especially where capital is not plentiful and can be employed in other branches of the business in a

Right of Way in Umpqua
National Forest, Oregon



Forebay of Copco plant on the Klamath River (above)
and (below) the Copco dam and power house which has
two generating units, with a total capacity of 25,000 kw.

Pole Construction in Medford, above;
below, Prospect to Springfield line.



Beaver Portland Cement Co., Gold Hill,
Oregon, with 1800 hp. in motor load.



way to bring greater returns than in a power plant competing with central station power.

The California Oregon Power Company furnishes power to some twenty-five lumber mills and box factories, the greater number of which use this power exclusively, the others using it in connection with their own steam generated power. The com-



Fall Creek power house and switch structures

pany furnishes power, with only one or two exceptions, to all of the lumber mills and factories within reasonable reach of its lines. Its business from this source has steadily grown until now it represents a very important division of its power load.

Irrigation by Electric Pumping

Irrigation by electric pumping has grown very rapidly, increasing over 500 per cent during the period under survey, and this load is still growing and will continue to grow. Prior to 1912 there was no irrigation by electric pumping in the territory. In 1916 this amounted to a connected load of about 750 kw. and in 1921 to a connected load of nearly 5,000 kw.

Irrigation load in this territory is not as desirable as it is farther south, as the season is shorter and the annual load factor poorer. This is especially true of the Klamath Falls section, where the altitude is around 4,000 feet above sea level. However, irrigation by electric pumping is a very material factor in developing the country and brings in its train increased population and larger and more prosperous towns, which in turn increase the more profitable business of the power company.

This being a mountainous section, there is considerable irrigation by gravity and where this can be done more economically than by pumping, it is encouraged by the company. However, it very frequently happens that pumping by electricity works out cheaper in the long run than the gravity system. The company has one consumer who discarded a gravity system, installing instead a 50-hp. electric motor. This was because the maintenance of his

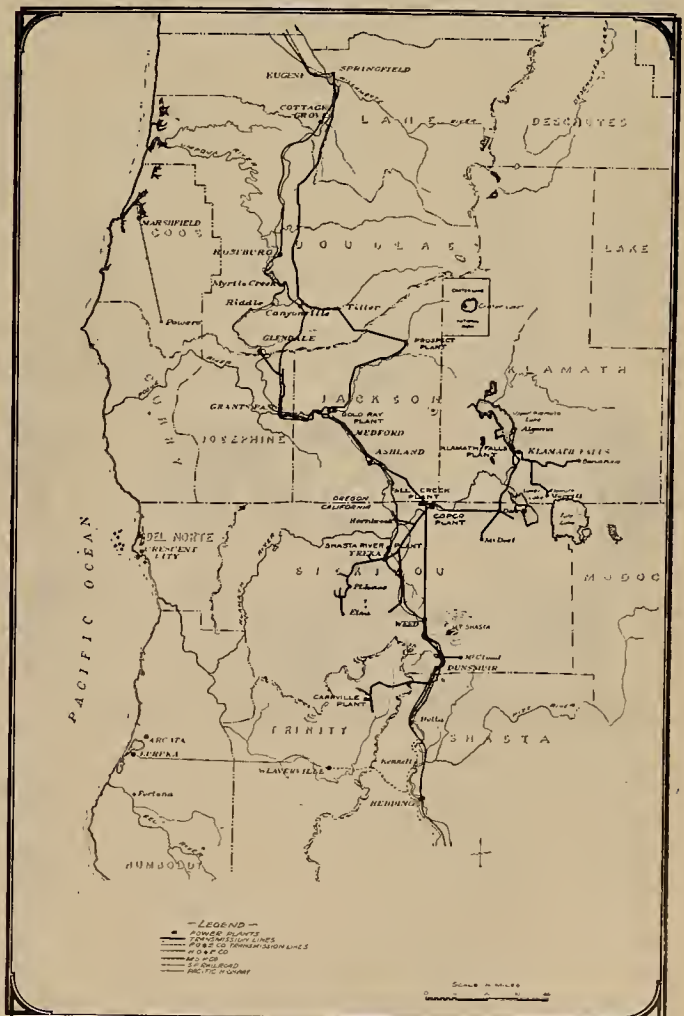
seven miles of ditch was more expensive and its operation far less reliable than the use of an electrically operated pump.

The company has contracted with the Grants Pass Irrigation District to supply power for 900 hp. in electric pumps to lift water from the main line ditches of the irrigation district to high line ditches. By this means a large additional acreage will be brought under irrigation and the cost of water per acre of the whole project will be materially reduced.

These two cases are mentioned simply to illustrate the fact that electric power pumping may frequently prove more economical than a gravity system for irrigation. In almost every case the capital investment per acre is considerably less.

Interconnection with Other Companies

In addition to supplying its own territory, the company furnishes power to the Pacific Gas & Electric Company on the south and to the Mountain States Power Company on the north. The connection with the Pacific Gas & Electric Company was made in 1919 under the auspices of the Railroad Commission of California, and a contract was entered into, under the terms of which The California Oregon Power Company supplies 8,600 kw. to the Pacific Gas & Electric Company. The connection with the



Map of The California Oregon Power Company stations and transmission lines in southern Oregon and northern California

Mountain States Power Company was made on Nov. 1. The company recently constructed a 124-mile transmission line from its Prospect power house to Springfield, Ore., for the purpose and increased its generating facilities by the installation of an additional 12,500-kw. unit in its Copco power house on Nov. 5, raising the Copco dam some 15 ft. This line is constructed for ultimate operation at 110 kv. and for temporary operation at 66 kv. The company has entered into a contract with the Mountain States Power Company for a period of thirty years to supply the power needs of the latter company. This company furnishes power through the Willamette Valley as far north as Dallas, Ore., there being only a twelve-mile gap between this point and the

lines of the Portland Railway Light & Power Company at Salem.

With the completion of the line from Prospect to Springfield, connecting the systems of The California Oregon Power Company and the Mountain States Power Company, the interconnected Pacific Coast power systems now extend from near the Mexican border almost to Salem, Ore.

The future growth of The California Oregon Power Company's load should be at an accelerated rate, inasmuch as with the completion of the Prospect-Springfield line connecting the systems of the Mountain States Power Company, the population served from the power system of The California Oregon Power Company has been practically doubled.

Service That Builds Business

By J. E. Bullard

IN ALL parts of the country that have been settled very long one runs across retail concerns that have been in business for a hundred years or more and that have been uniformly successful from the day they were founded. It is interesting to study these concerns, their methods and their policies to learn if possible the secret of their success and long life.

There are a number of things that these concerns do not do. For example, the writer has never yet been able to find a concern a hundred years old that makes it a practice to cut prices. These concerns do not make extravagant statements in their advertising, or promises they cannot keep. They give good values but as a rule let other people do most of the talking about this rather than talking about it themselves.

One thing these stores always do is to serve the community in which they are located. They



serve these communities in a little different way than other stores. Usually they serve them better.

A hardware store in a little city of 11,000 population, as an example, carries in stock a great many things that people are not able to find in any other store. It carries nothing but reliable goods and if anyone buys anything there, which for any reason is not satisfactory, that store wants these goods returned. Rarely, however, does this happen because the stock is purchased with the greatest possible care and examined thoroughly before it is placed on sale.

If the electrical contractor-dealer were to base his policy upon the same principles that have made this and other stores exist so long and make a good living if not good sized fortunes for so many men, he would go about it somewhat as follows: First of all, he wouldn't worry very much about what his competitors are doing or the prices they are quoting. He would devote all his time and his energy to seeing that his customers are satisfied.

If for any reason he lost a customer, he would find out if possible why he lost that customer and would spare no effort to get him back. As a matter of fact he would give a great deal more attention to holding old customers than to securing new ones.

He would do this because he is building for the future. He would realize, to take the case of a newly married couple who purchased some appliances from him for their new home, that rendering them service which would give them entire satisfaction and cause them to trade with him all their lives, would lead to new customers from that same family.

If he satisfies these people, if he gets them into the habit of relying upon him and of buying their electrical appliances of him, their children when they grow up will be very likely to trade at his store.

Suppose that this family has two children. In twenty-five years from the date of the first sale they will probably have homes of their own. By satisfying the old customer he has gained two more. He now has three instead of one. In another twenty-five years, if each of the two new families has but two children, he has six customers in place of the one with which he started, assuming that the original customers have passed on to the next world.

Service That Satisfies Pays

Rendering entirely satisfactory service has resulted in six customers in the place of one, without any special effort to secure new ones and without going outside of the original family. Of course, if the first customer was satisfied, that customer will have been influential in securing new customers

among his friends and relatives. However, we will leave that entirely out of the case.

If the first customers of the contractor and dealer have larger families, if for example they average three children each, then in twenty-five years the number of customers from this family has increased to four and in fifty years, assuming that the original customers have died, the number has increased to twelve.

These figures show one way in which the old concerns have grown. By being able to hold the trade of the original customers, they have been able early in their life to form the habit in the next generation of trading at their stores. Since the habit has been formed early in life it becomes firmly fixed.



By the third generation it usually becomes almost a tradition in the family, so when we examine the business of the oldest retail institutions in the country we find among the customers the grandchildren, the great-grandchildren and possibly the great-great-grandchildren of the original customers. Such a store need have little fear of competition as long as it can satisfy its customers.

The electrical industry is not very old. Forty years ago it was hardly in the bell wiring stage. Therefore, there are no really old concerns in this industry, yet there are a goodly number which are so well founded they will go on for generations.

Among these one does not find price cutters, or those featuring all kinds of bargains. They are the concerns that have been doing the very best work at a fair profit and that handle only the most reliable goods. These concerns will buy nothing that does not measure up to a high standard. They will not do a job of wiring that will not stand the test of time and continue to give satisfaction just as long as it is possible to make such a job give satisfaction.

Follow Up the First Sale

These concerns keep track of their customers and follow them up. They do not let a single customer, no matter how small, get away from them without making a determined effort to hold him. Every decision that is made must be one that will result in a favorable effect upon the business years hence as well as at the present. In other words, the effort is to build solidly and safely rather than to build rapidly, and usually the growth is very much more rapid and it always is more certain than where the policy is to let the morrow take care of itself.

These electrical contractors and dealers are not patterning their policies after what others are doing. They adopt high business ideals and adhere to them.

There are those in the electrical business who claim that during the past few years in the appliance end of the business too much attention has

been given to making sales and too little attention to giving service. They give this as the reason why it has been so hard to maintain sales volume since 1920. This may be the reason (and it may not be the reason) why appliances have been so hard to sell since the period of falling prices began. There are a great many other factors that have entered in.

One thing, however, is certain, the appliance dealers who have given the greatest amount of attention to making the appliances sold serve the purchasers best, are those that are finding it easiest to sell them now. They are finding it easier because they have been careful to make each sale a foundation for a future sale.

Preparing for Future Sales

Some of these concerns, in fact, have laid the foundation for the appliance sales farther back than that. They have laid it at the time they have figured on the wiring of residences and apartments. They have sold a wiring job that, when completed, will make it easier for the appliances used to give all the results that are claimed for them. Some of these concerns have been willing to lose jobs where they were not able to convince the person having the job that it should be done right.

There is a saying in business that perhaps has not been emphasized to the extent that it should. It can be expressed as follows: "The concern that keeps grasping for business will eventually be gasping for business."

Reaching out for new business is an exceedingly expensive proposition, it is so expensive that it will



surely prove ruinous unless the old customers are first satisfied. One reason why the cost of living is so high is that many concerns are losing old customers.

A person who discontinues doing business with one concern must spend valuable time shopping around trying to find another that will give him satisfaction. A concern that loses the trade of just one customer loses much more than the amount represented by that purchaser. It loses the trade of the descendants of that customer. It loses the good influence of that customer. It will probably have to secure a number of new ones in order to replace the lost one. It is losing a great deal of profit, it otherwise could have made.

Serving the old customers in such a manner as to keep them thoroughly satisfied always builds profit and it also lengthens the life of the concern rendering that service. To do this it is necessary always to give the old customers just a little more attention than the new ones, to give them the first attention.



One of the Edison company district offices showing appliances on display

Building An Appliance Load

By A. W. Childs*

SIXTEEN years ago the Southern California Edison Company found itself confronted with the problem of discovering and developing a market for its surplus hydroelectric energy. Today it faces the same situation. Back in 1906, just as today, the home, agriculture and industry comprised the outlets through which this energy must flow. Today the company is turning to the home for the absorption of this surplus with the expectation that during 1923 it will place on its lines a minimum of 1,500 electric ranges and 500 electric water heaters. Sixteen years ago the company turned to the domestic consumer and through an intensive educational and merchandising campaign built up a highly desirable load. At that time a careful consideration of the factors involved convinced the company executives that the so-called "lamp socket" appliance and the motor were the media through which the surplus energy could be absorbed. Less than two years were required to prove that the appliance was designed to be the controlling factor in this load-building process. This conclusion was based upon the premise that the domestic load was very desirable, first, because of the possibilities for its development due to the great number of consumers, and, second, because a domestic appliance was an off-peak load—one which tended to increase the load factor and fill in the valleys in the load curve.

The situation in the industry in 1906 was such that the central station itself was required to assume the task of placing these appliances in the home. Educational work was necessary and the power company seemed to be the logical agency for

the distribution of the appliances. In consequence, a definite merchandising policy was adopted and a vigorous sales campaign instituted. Some of the initial steps taken by the company are interesting. It was estimated that the income from an electric iron was approximately \$6 per year with the rates which existed at that time. In order to introduce the electric iron among its customers the Edison Company purchased and loaned 10,000 irons for a stated period of time, allowing the customer the right to purchase the iron provided it proved satisfactory. Within twelve months or so, 90 per cent of the irons were sold to the women to whom they were loaned. This was followed by an offer to consumers to make an allowance on old sad irons taken in exchange on new electric irons. This worked out so well that the same plan was adopted to introduce the electric coffee percolator. An allowance was made on old coffee pots. Thousands of irons and percolators were sold as a result of the exchange offer.

Merchandising Methods Successful

In ten years the company, through its merchandising department, disposed of many thousands of appliances to its customers. The sales some years reaching a total of 30,000 appliances. The load climbed as was desired, and the load factor gradually increased. Office displays were maintained, merchandising experts employed and advertising campaigns promulgated. Often as many as 30 canvassers were in the field at one time.

The situation reached a climax in 1917. Conditions developed among the dealers and jobbers which resulted in a general discussion of the subject

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by the industry at the Riverside Convention of the Pacific Coast Section of the National Electric Light Association that year. At this meeting the central station explained its attitude on the question of merchandising. It mattered not to the company who sold the appliances so long as they were sold, officials explained. As a result of this meeting the Edison company modified its appliance sales efforts. It reserved the right to display appliances in its offices and sell them to those customers who made inquiries, but it ceased to solicit sales from house to house. The dealers were given the privilege of also displaying appliances in the company's district offices and in many instances the central station's own displays were placarded with the information that the appliances could be purchased from any of the community's electrical dealers.

This arrangement has proven satisfactory in the main. The appliance load has continued to grow. However, there has been one weakness, in particular—the development of the market for electric ranges and water heaters. The fault does not lie entirely with the electrical dealer. In the past the problem of placing the electric range in the public's kitchen has been approached from a merchandising



Each of these sad irons was replaced by a more modern electric iron

standpoint. The electric range offers a problem of sales promotion, at least until such a time as a desire for the range has been created in the mind of the public, and cannot always be handled by ordinary merchandising methods. From a revenue producing standpoint the range is a most valuable adjunct to the power company's line and as such it should be pioneered by the company.

Cooking and Heating Load Desirable

In further considering the meritorious points of the cooking and heating load, some consideration should be given to the value of this service to the public. The value to the public of cooking and heating by electricity as compared with other fuels, arises chiefly from the factors of convenience, cleanliness, safety and comfort. Its greatest appeal should be in those districts which are not supplied with gas as fuel. However, it is evident that even in competition with gas, electricity has its advantages. It is far more economical than gas so far as the question of food conservation is concerned.

The proposal of the Southern California Edison Company to add 1,500 electric ranges and 500 water heaters to its lines during 1923 by means of an active sales campaign takes on a new interpretation in view of the foregoing sketch of the merchandising activities in the past, and the present situation with regard to load demands and the range market. Moreover, the company is in a position to benefit from past experience for in the two years preceding 1918, a total of 3,000 ranges was placed on the lines as a result of a range campaign.

Contractor-Dealer to Benefit

In outlining the sales campaign, the contractor-dealer has been given due consideration, for it will be his task to take over the sales when the demand has reached the point where promotional work will no longer be required. The dealer has proven his worth as a merchandiser of socket appliances and his lack of success in merchandising ranges cannot be held against him. Different sales methods were necessary—methods entailing heavy expense. The profit has been far too small and the cost of making a sale too great. Prices have also been against him for they have been too high. His financial position has been such that he could not profitably invest in a large stock. With the power company and the manufacturers backing an intensified range campaign, the position of the dealer will be improved. The central station is building for the future and the cost of the promotional and educational work involved in creating a demand for ranges and water heaters will not enter in, for each time that it adds a range to its lines it is assured of revenue for years to come.

The dealer will benefit from these activities, for the demand for ranges which is created will be reflected in an increase in his range sales. With a reasonable amount of effort he can tie in with the campaign in the locality which he serves.

The company will not engage in the wiring business, leaving that entirely to the contractor. A plan has been evolved whereby a flat price will be quoted for installing the range. Contractors have been asked to submit an average price for a range installation and this will be quoted except under extraordinary circumstances. The company will not profit from the wiring job. The amount of wiring business which will be involved in the installation of 1,500 ranges and 500 water heaters is considerable and the contractor-dealer will be the one who will profit.

Insofar as the central station is concerned, the task is not strictly one of merchandising but one of education. We are seeking no merchandising profit. We are building for the future. The plan as outlined is one which will demand cooperation from every branch of the industry and one in which the entire industry will benefit. The central station company developing hydroelectric energy in great quantities, must find a market for the product, and the electric range points the way to a practically unlimited field which only needs cultivation to yield a satisfactory harvest.

ELECTRICITY IN INDUSTRY



By Louis F. Leurey
Industrial Electrical Engineer

Illumination of Quarry and Tramway for Night Production

AT THE plant of the Old Mission Portland Cement Company at San Juan Bautista, Calif., it became necessary to carry on a certain amount of quarry operations at night in order to meet the requirements of increased production.

In the development of this quarry, the rock was taken out by means of tunnels and traps underneath the quarry face, and cars from these tunnels dumped into a loading hopper near the lower end of the quarry face. From this hopper, a gravity tramway extended 1,200 ft. to the main railway line at the foot of the hill.

To handle production successfully at night, it was not only necessary to illuminate the quarry but was also necessary to illuminate the 1,200 ft. of tramway so that operators at the top of the hill could clearly see the cars the entire distance to the bottom.

The lighting of the quarry was handled by planting 500-watt General Electric projectors in the foot of the slope with quick removable attachments so that they could be moved to a place of cover before each round of blasting. With this in view the projectors were mounted on a simple board which could be propped into any desired angle quickly and it was of sufficient lightness to permit of its ready handling during each blast. The projectors were selected with a medium angle of diffusion so as not to have too much intensity when the quarrymen are facing down hill.

The whiteness of the rock face lent itself very readily to the method of illumination.

The lighting of the tramway line introduced a somewhat special condition as it was situated on a very narrow strip and it therefore became necessary to select a unit having a maximum coverage along the axis of the tram and a minimum across the tram. Benjamin Parabolite reflectors were selected for this work and were mounted on poles at approximately 100-ft. intervals down the length of the tram.

Advantage was taken of the sloping ground in hanging these reflectors so that a positive cutoff was secured on the uphill side, thus permitting the operator to get a clear view of the cars without being troubled by the glare of the lighting unit itself. This installation has been entirely successful both from an illumination and a safety point of view.

Advantageous Publicity Through Use of Flood Lights

IT IS becoming more generally recognized that one of the most effective and pleasing forms of publicity for public structures and for high-class industrial buildings, is to make use of well-designed spectacular illumination so that the buildings give a most attractive appearance during the evening hours and



Fig. 1—City Hall, Long Beach, Calif.

thus secure the attention of the general public to an extent not possible during the ordinary business hours of the day.

There are two distinct methods by which this can be accomplished and the accompanying photographs show typical examples of what can be done in each class.

The exterior of the city hall of the City of Long Beach, Calif., is shown in Fig. 1. The flood lighting was done under the direction of C. M. Masson, as a demonstration by the local power company for the benefit of the City Commission of Long Beach. The effect was produced by the use of Western Electric Davis flood lights mounted at points where they would not come within the line of vision of the passers-by. This particular effect has been excellently planned, by well directed angles of projec-

of modern illumination. As will be noted in the photograph, the entire wall area other than the space occupied by the columns and pilasters consists of steel sash, and there has been no attempt in the interior illumination to secure the window effect produced. The effect is solely the result of the employment of sufficient intensity of illumination for good milling purposes plus a white painted interior and the use of refractors of the vapor proof type over the lighting units.

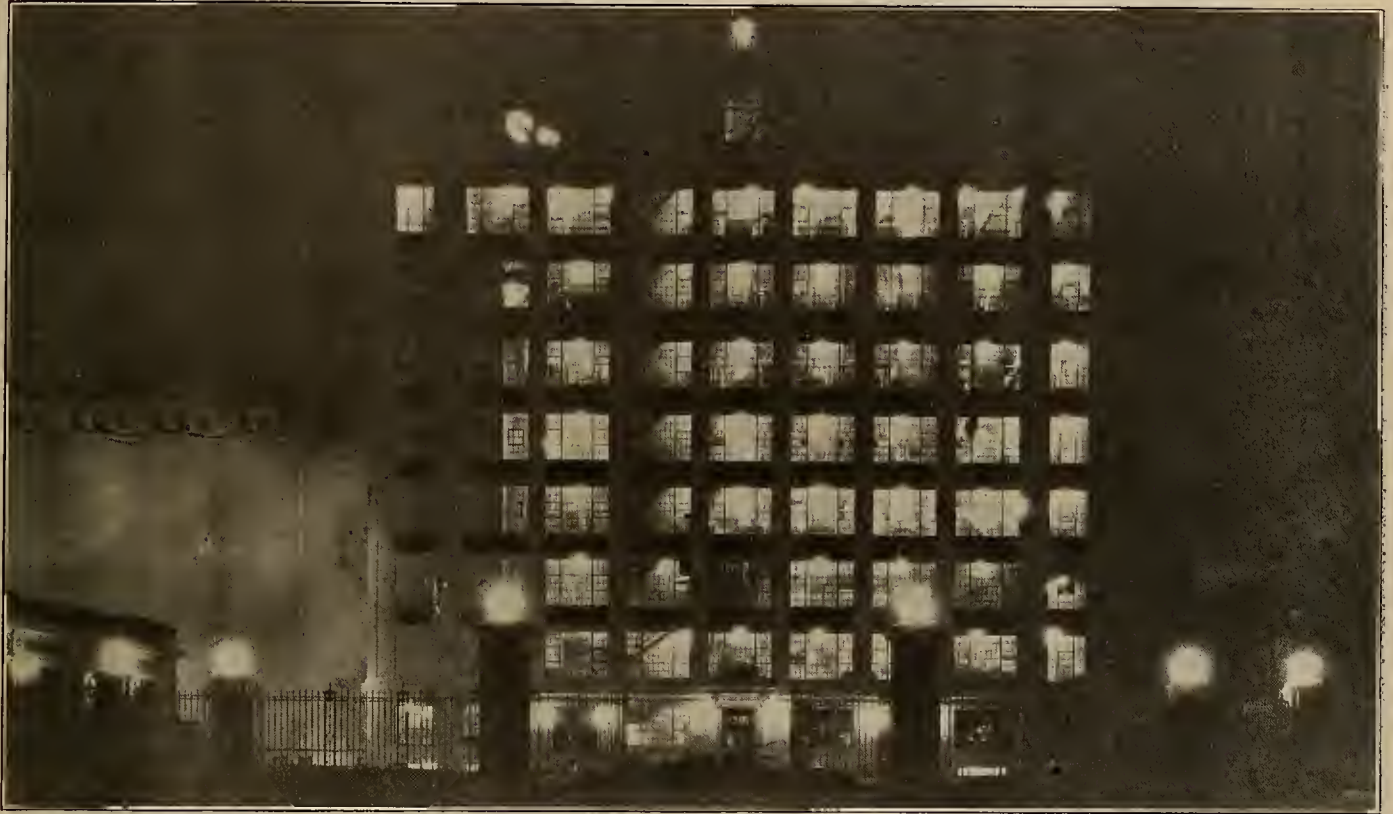


Fig. 2—Ogden mill of the Sperry Flour Company

tion, and by varying fields of intensity, thus producing sufficient shadows to secure full architectural definition.

One of the most frequent mistakes made in the employment of flood lighting on the face of public buildings is to make it so intense and uniform in character as to wipe out all architectural outline and thus render the effect flat and lifeless.

A photograph of the flour mill of the Sperry Flour Company at Ogden, Utah, is shown in Fig. 2. This mill has the reputation of being one of the best lighted industrial plants in the country. From the basement to the tower every floor, regardless of its uses, is illuminated by dust and vapor proof lighting fixtures, thus insuring the maximum of personal safety, of absence of eye fatigue, of cleanliness of mill and product, and an increased over-all efficiency of the employees due to the mental alertness produced during the night working hours.

On the main floor of this flour mill, the vapor proof units are of the Benjamin refractor type which taken together with the secondary value of white walls, produces an intensive and spectacular quality

This mill has been architecturally located with a well designed court yard opposite its main entrance at the end of Sperry Avenue, so named by the citizens of Ogden as a recognition of the progressiveness of the Sperry Flour Company in putting up an industrial building of this high quality.

In the case of the Sperry Flour Company, only minor efforts are made to illuminate the exterior of the building. The grain elevators are lighted by very few flood lights, the purpose being to enable men arriving with loads of wheat to see their way more easily. The reflected light from these white surfaces furnish sufficient illumination for this purpose. The electroliers in the foreground of the accompanying photograph are located at the entrance to the grounds occupied by the flour company and are purely for decorative reasons.

Industrial companies are now learning to realize that by putting up buildings of this quality and bringing them into prominence by such high-class methods, they are securing a quality of publicity and a fund of good will which is invaluable in their business.

JOBBER, DEALER AND SALES AGENT



Helping the Electrical Dealer Sell His Merchandise

Two Months' Advertising Campaign Conducted by Los Angeles
Jobber to Stimulate Sale of Appliances

Advertising, the same as selling, falls into two general classes, the creative or constructive, and the destructive. The first builds business for every one and creates good will for the industry. The second, based on selfish motives, tears down this good will and gives nothing in return. The salesman who first sells the idea behind his product and then tells why his product is superior to others, obtains more business than the one who begins his selling talk by damning the products of his competitors. This same principle is applicable to advertising.

The electrical industry during its development and growth, has furnished many examples of constructive advertising, not only in the campaigns of individual manufacturers, but also in the cooperative advertising campaigns which have been instituted in various localities for educating the public in electrical methods. The advertising campaign which is being undertaken by the Los Angeles branch of the Western Electric Company in southern California and the Pacific Southwest at the present time demonstrates the high principles which actuated the electrical industry in all of its past activities.

The status of the electrical industry at the present time is such that the advertising which it puts forth must sell the electrical idea. The industry is yet in its infancy and those with goods to be sold recognize the fact that while the public is in a receptive mood toward electrical household appliances, there is still much educational work to be done. The Western Electric campaign has been evolved with this in mind. While the copy has been prepared with a view of selling the manufacturer's name, the principal message it carries is primarily the electrical story—what electrical appliances can do to better the living conditions in the home.

The campaign consists primarily of a series of seven small "teaser advertisements," followed by eight full pages in the Los Angeles Examiner. It will extend over a period of approximately two months, ending just before Christmas with a series of advertisements directed toward the Christmas shopper. In addition to these advertisements, a total of fifty-six billboards in and around Los Angeles are being used to put over the message.

The company has based its campaign on the premise that the proper function of a jobber is to assist in the education

of the public through advertising, and in fulfilling this function, it is committed to the policy of selling the electrical idea through the medium of publicity as well as supplying its dealer-customers with a complete sales promotion service. The company's operations are based on the belief that the contractor-dealer is entitled to a reasonable return for the distributing and selling function which he performs and in consequence it attempts to encourage the sale of its products to the consumer at prices which will net a fair margin of profit, through such channels of trade as will

render a measure of service calculated to increase the use of electricity.

One of the features of the campaign was the series of "teaser" advertisements which have already been run. The ads consisted of a reproduction of the old-time servant girl which is appearing in the national advertising of the Western Electric Company at the present time. The reason for the teaser ads was this: Given an advertising campaign, a certain amount of waste circulation must be deducted from the regular circulation of the advertising mediums in the concession that naturally not every reader of the paper reads every advertisement. The creation of mystery or suspense in the form of teaser advertisements has the effect, then, of increasing reader interest, for nearly every person who sees the teas-

Washing's done—Play time, now!



Western Electric Clothes Washer Has Won Another Day of Leisure

AFTER all, what's the greatest gift an Electric Clothes Washer brings a woman? Time to do what she wants to do—in that right?

That's why it is so important that the RIGHT washer be purchased at first—so that there can never be doubt that the plans made for wash-day afterwards will go through as expected.

Every day women who wish to economize in money, clothes and in human strength prove the wonderful saving in money, in clothes and in labor by using the Western Electric Washers.

They wash fabrics of every character from rugs to sheer muslins, wash them snowy clean, without injury.

Western Electric Company for fifty-three years have been leaders in the electrical industry. The washer and the other members of the household economy group are the result of long continued research and experiment by our engineers and scientists who have demonstrated the practicability of the improvements put into Western Electric appliances.

Telephones, interphones, telephones and telegraph apparatus, telephone switchboards, radio equipment such as land-line—the first phone installation in cable, overhead and cable—(of course on the streets of Los Angeles and other

cities)—these are some of the many Western Electric products, and each must be made with the most scrupulous care and an eye to continuous, unflinching service over long ranges of time.

Naturally, Western Electric cannot afford to ignore this enviable reputation by taking any less care in the manufacture of the Western Electric Washing Machine, which can easily do the ordinary day's washing in an hour, leaving plenty of time for relaxation.

The wringer on the Western Electric Washer wrings from washer to the tub. Remember it is not a stationary wringer.

The operating cost is but a few cents each wash day.

Go down to your dealer—TODAY! There is no better time than right now, after you've read this. He'll show you just how easy the Western Electric Clothes Washer is to operate, how sturdy it's built, how economical it is—how it pays for itself in quick time—and explain how they can be purchased on easy terms.

Ask him to show you the other members of the Western Electric Company's six household servants, too.

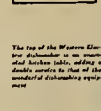
They'll do all your work for you better and faster than you can do it, and give you time to answer the outdoor lure of Southern California. If you wish, buy one or two of the Western Electric "servants" now, adding the others later.

The Western Electric Family of Six Electrical Household Appliances to Save Labor.

If you don't want to use the washing brush in the Western Electric Washer, a wringer is one of the most handy in use.



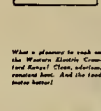
You can enjoy the Western Electric Strong Washers with your clothes on or off. It's no longer than a wringer, but, and a lot of it.



The top of the Western Electric clothes wringer is so made that clothes wringer, adding a double wringer to the list of the most useful household appliances.



Setting down the Western Electric wringer, use the foot pedal to wring out clothes. It's so easy to use, and the foot pedal is so strong and careful as to be sure to wring out every drop.



When it's necessary to wash in the Western Electric Clothes Washer, use the foot pedal to wring out clothes. It's so easy to use, and the foot pedal is so strong and careful as to be sure to wring out every drop.



Remember the old-time Servant Girl of 20 years ago! Dependable, cheerful—always hard at work. This work she used to do can now be done in every way as well, and in some respects better, by the six Western Electric appliances.

They Are Easy to Acquire—
See Your Dealer Today

Western Electric

Since 1869 (53 Years) Makers of Electrical Equipment

"Everything Electrical"

301 East Eighth Street

Los Angeles

A sample of the copy which is being used in the newspaper campaign

ers is practically sure to look for the solution in the advertisements which follow. Having seen the teaser advertisements, it is safe to assume that an amount of interest that will carry-over to the succeeding advertisements has been engendered, and the ads which are to come will be read.

The "Servant Girl" which features the first of the series of advertisements represents a symbol of the service which modern electrical household appliances are able to provide in the home. "Remember the old-time servant girl of 20 years ago?" is asked in every advertisement in which the cut appears. Some of the messages which appear in the teaser advertisements which feature this servant girl idea follow:

"In my day, work was spelled the same way as now—but it was done by hand."

"It has taken a generation of science and a worldful of engineers to make machines to do housework—but they do it better than I did."

"You may paddle your own canoe, but you don't have to pedal your sewing machine. — does it quicker and better."

"When I was young housework was a drudgery, requiring long, weary hours. Today it's done by — machines—even dishwashing."

"How to live twenty-four hours a day: Do your housework the —

way—see page advertisement in tomorrow's Examiner."

The copy which follows is written to carry the message that electrical appliances can do all the work the old-time servant girl did, and do it better, quicker and more economically without the necessity of having the girl herself around. The effectiveness of this idea in bringing before the housewife the convenience of electrical household servants is evident.

It has been estimated that fully 80 per cent of the electrical household appliances sold today are purchased on an installment basis. In consequence all of the advertisements emphasize the idea that the appliances advertised are easy to purchase. "They're easy to acquire—see your dealer today!" is the final message on each advertisement.

Single Feature with Group Background

The group idea is also brought out in each advertisement. In all of them with the exception of the final Christmas spread, one appliance only is emphasized. Yet in every case all of the remaining appliances of the line are brought to the attention of the reader in a series of little pen-and-ink sketches and descriptions. The copy is written on the principle that fifty per cent of the work to be accomplished by the advertisement is the selling of the manu-



The old-time servant girl, one of the important features of the advertising copy

facturer's name while the other fifty per cent is the selling of the electrical idea. It is the dealer's part to sell the completely electrified home. When the dealer places the first appliance in the home, his task is half finished. At the time when but one more payment remains on this appliance he may call on the housewife and demonstrate to her the added conveniences which will come with another appliance. If the housewife has been thoroughly sold on the first she is in a far more receptive mood to listen to his sales arguments regarding the second. In this manner the task of placing the six major appliances in the home is easy.

Happiness is the basic theme of all the copy. More leisure hours, more time for social life and outdoors, less drudgery, are some of the things emphasized.

Tieing-in with the Dealer

The company has prepared a number of dealer tieups for the campaign. Included in these is a series of booklets on each of the six appliances advertised, which may be included in statements, passed out over the counter or mailed to prospects. Window display material and counter display material has also been prepared for the dealers. Full-page reprints of the various advertisements as they appear will be furnished with the dealer's name imprinted for use in windows or for distribution.

It is expected that this campaign will not only increase the sale of the products of the Western Electric Company but also will be of inestimable value to the entire industry. With the approach of the Christmas holiday buying period, any advertising which will tend to bring the electrical idea before the public eye will aid in the selling of electrical appliances irrespective of the make. Dealers will benefit also for their sales will be increased with no cost to them. On the whole the campaign is one of the largest of its kind ever undertaken in the West.

The smell of Christmas is quite as important an element in the psychology of the Christmas spirit as the sight of lights and colored balls. Christmas greens not only add a festive appearance to either the outside or the inside of the store, but they lend the fragrance of pine woods which combines with the display of shining nickelware to convey the idea of Christmas giving.

Christmas gifts that bring daily happiness!



The Western Electric Vacuum Cleaner makes Christmas morning and afternoon so much more pleasant. It cleans the house so thoroughly that you can be sure to have a happy New Year.



Western Electric Vacuum Cleaners and clothes washers are the best gifts you can give. They are so easy to use that even a child can operate them.



And the Western Electric Clothes Washer? It's the best gift you can give. It's so easy to use that even a child can operate it.

What a joy it is to give the right thing; to know it's right, that it will last, that it will keep on giving happiness, unceasingly, for almost time without end! You'd give her—the secret heart you married—that sort of Christmas gift, if you could find it, wouldn't you?

HERE'S HAPPINESS! Western Electric's six faithful electrical servants—vacuum, clothes washer, electric range, vacuum sweeper, sewing machine, dishwasher, and kitchen table—the highest type of Christmas gifts.

See in the picture how joyously Mrs. Homemaker looks when the coming and going house servants her husband has provided her.

Now she is going to have an ALL-YEAR-ROUND CHRISTMAS—year after year. Every day she is going to have a chance to appreciate these faithful gifts. Golden hours of leisure will be hers; she is going to have time, now, for sewing, for mending, for bridge, for enjoying Southern California's great outdoors, for going through the range, giving up into the mountains and looking with other fortunate folk at the snow-capped peaks.

See how happy Mr. Homemaker is? He's discovered one of the big pleasures of his—the smile of a joyful sweetheart, from whose mind vision of tedious days has been erased.

Real Christmas presents, these. Not mere novelties, whose usefulness is quickly forgotten, or whose novelty is soon a bore.

And not expensive, either. For within a year or so they'll be paid for. In the future, after that they give back dividends day after day in economy, time and more pleasure.

Western Electric provides the entire six-item electrical service, capable as the electrical servants get more thorough, less expensive. Western Electric servants adapt themselves to tasks as far apart as dishwashing, cleaning the automobile, and the tending of the coffee.

First are the six Western Electric's faithful electrical servants: THE WESTERN ELECTRIC CLOTHES WASHER AND VACUUM CLEANER. These are the best gifts you can give. They are so easy to use that even a child can operate them.

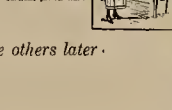
THE WESTERN ELECTRIC DISHWASHER is a useful machine in a kitchen at the usual time. It is so easy to use that even a child can operate it.

THE WESTERN ELECTRIC VACUUM SWEEPER makes housecleaning a pleasure. The motor-driven brush spins faster than a top, and the dust and dirt are sucked up into the vacuum bag. Bags, rollers, gears, and other parts are so easy to change that even a child can do it.

THE WESTERN ELECTRIC DISH WASHER AND KITCHEN TABLE serves carefully and efficiently the task of washing the dishes.

THE WESTERN ELECTRIC SEWING MACHINE makes the task of sewing so easy to control with the foot, and there is no need to push.

THE WESTERN ELECTRIC CRAWFORD RANGE gives you a better stove and a better kitchen. It's so easy to use that even a child can operate it. It makes the food taste better, too!



If you prefer, get one or two Western Electrics at first, adding the others later.

They're easy to acquire—See your dealer today!
Since 1869 (53 years) makers of electrical equipment

Western Electric

301 East Eighth Street

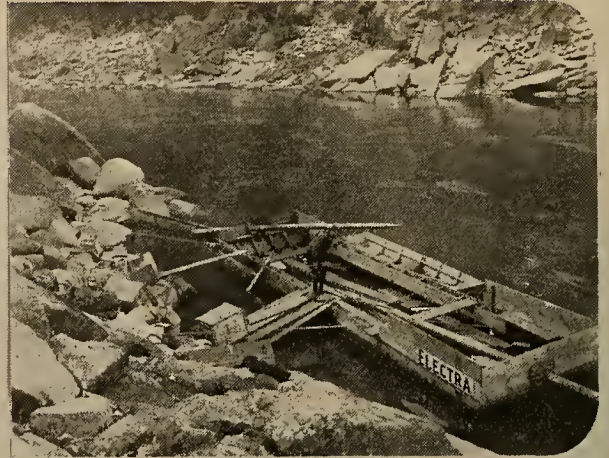
"Everything Electrical"

Los Angeles

The last advertisement of the series, emphasizing the happiness idea of Christmas Day



Scenery: Like this compensated for hardships—



After the first wreck —All Hands Out!



*WILL, STUBBS, SANDERSON, PETERSON, BACK, AVERILL, DEMING.
LITTLER in a moment of Relaxation*



GUY LITTLER — Official Photographer



Floyd Averill

Down a River of No Return



*Dave and Fred the Boatmen
in Action*



A tense moment — Running the Dump Creek Rapids.



"SANDY"



Paul the Cook poses in full Regalia



Reminiscent of the Grand Canyon



STUBBS, PETERSON, TIGE, PAL, SANDERSON



At Riggins, Oct. 21, the End of the Journey described on the following Page



At Salmon. Ready to Shore Off Sept. 28

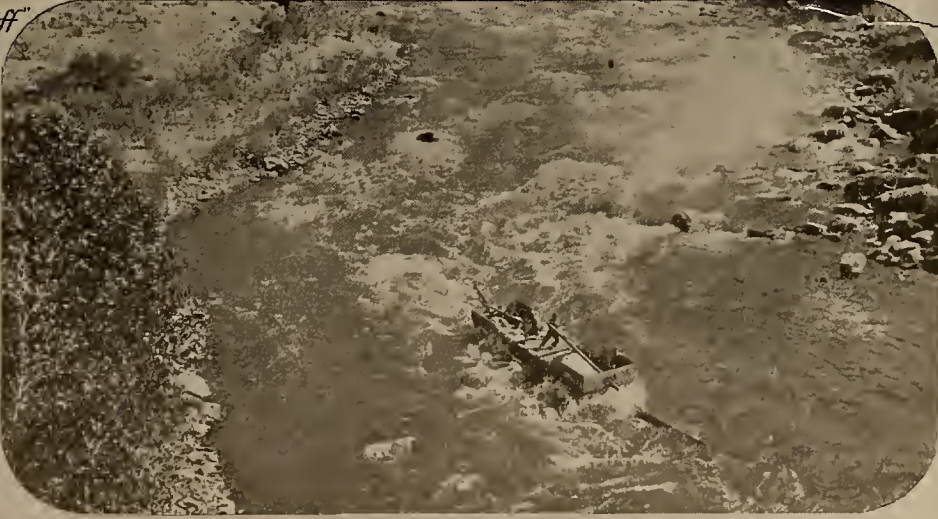


"PETE"

The Cruise of The "Electra"



Bill Deming



Whitewater and Plenty of it Made Life Interesting

Electrical Men Return from Trip Down Salmon River

ELECTRICAL men are often thought of as pioneers in business and power development and adventurers and explorers in the realm of science, but it remained for eight intrepid westerners to establish themselves as explorers and adventurers in one of the few remaining wildernesses in America. The adventure which admits them to fame, pictures of which are shown on the two preceding pages, was a 175-mile journey by boat down the Salmon River, in Idaho, from Salmon City to Riggins. The intrepid explorers, all well known in the electrical industry in the West, are as follows: F. N. Averill, president, Fobes Supply Company, Portland; C. R. Bach, Pacific Coast manager, Manhattan Electric Supply Company, San Francisco; W. M. Deming, president and general manager, Atlantic Pacific Radio Supplies Company, San Francisco; Guy Littler, president, West Coast Engineering Company, Portland; S. W. Peterson, general manager, Stubbs Electric Company, Portland; H. E. Sanderson, Pacific Coast manager, Bryant Electric Company, San Francisco; O. B. Stubbs, president, Stubbs Electric Company, Portland, and C. M. Will, manager, Fobes Supply Company, Portland.

Expeditions of this nature have been a biennial event with these men for a number of years, but this trip is by far the most hazardous and adventuresome. Three weeks were consumed in traversing the 175 miles of river, due to the unusually low water which made the rapids exceedingly treacherous. The boat "Electra," which was a flat bottomed affair about 30 ft. in length, was wrecked four times. And although the party subsisted on bacon and "dough-gods" for the last two days, due to the boatman having inadvertently thrown the rations overboard with the stove during an impending wreck, no serious accident occurred.

H. E. Sanderson, in discussing the trip, remarked, in part, as follows:

"If you should become enthused to the point of wanting to take this trip, hesitate and take the word of one who knows from experience that this is no country for a tenderfoot. To the Nez Perce, Shoshonés and that renegade tribe of Sheepstealer Indians it was probably Paradise—to the unsuspecting tenderfoot, it is just the opposite, so again pause—and take my advice—when you want a river trip confine it to one of the many placid streams which run through civilized country.

"We went into this country with the idea that we amounted to something, but after the river got through with us we realized that we were next to nothing in the big scheme of the Universe. We left the small cattle town of Armstead, Mont., on the Gilmore & Pittsburgh (known locally as Grief and Pain) Railway for Salmon City, Idaho, 95 miles away, at 8 a.m., and after a rapid journey of ten hours reached Salmon at 6 p.m.

"At Salmon we had a boat built for us for the trip down the river. This was to be in charge of a riverman by the name of Smith. When we boarded the train at Armstead we found several natives of Salmon on board and

being interested in the men who were to pilot us on the river, we began to ask questions as to the ability of our boatman. Our enthusiasm received a jolt when we were informed that they had never heard of Smith and that a Captain Guleke was the only man who had ever successfully navigated the Salmon River and incidentally that everyone else who attempted it left their boat and their mangled remains strewn through the rapids. One of these natives, who was full of statistics and moonshine, told us that each of the many rapids has claimed at least a dozen men, so by the time we reached Salmon our morale was somewhat shattered. From Ledore to Salmon we went through a wonderful valley which abounded with ducks, geese and sagehen, with a fine trout stream following the valley. We eventually reached Salmon and found a little town of 2,500 inhabitants, also that our boatman, Smith, had mixed with a bandsaw two days before and had come out second best in the argument, being mussed-up so badly that he could not make the trip. However, we engaged another man to handle the front sweep, who, we were informed, was an old experienced river man, but who had not run the river for ten years, and as the channel and rocks are changing each season, we had visions of a rough voyage.

"We were naturally interested in the boat which was to be our home for the next two weeks (some of the boys, I think, felt that it might be for a couple of years), so we all went down to the river and there was our boat looking like an ocean liner. 32 ft. long, 8 ft. wide, and drawing about 10 in. of water when fully loaded. After inspection we christened her "Electra," breaking a bottle of something over her bow not a drop of which was wasted, as we discovered some of the boys had provided themselves with sponges for just such an emergency.

"After supper we met our crew, Dave Sandalinds and Fred Bransted, and they looked like 'he-men'—and believe me they were—as it proved afterwards on many occasions.

"The next morning we loaded and while doing so listened to several of the natives whom I imagine were undertakers, as their one topic of conversation was 'sudden death' and 'how the river got them.' If my knowledge of the English language enabled me to spoil it with the abandon of an Albert Elliot, I could write volumes on the scenic wonders of the trip, but why waste time when the pictures speak for themselves and show this country to be a combination of the Grand Canyon, Yellowstone Park and Yosemite Valley?

"It took us about half an hour after leaving Salmon to get into real wilderness and the rest of twenty days to get out of it, and after we disembarked at Riggins, Idaho, 175 miles down the river, we were still in the wildest country left in the United States."

THE CRAB CLASSIFIED

By JOE OSIER

And the wise man lifted up his voice and spake thus:

"The daughter of a crab does not give birth to a bird." And I—poor scribe

that I am—

In an effort to earn my cakes this day—laboriously lift and lower my fingers on my typewriter in an attempt to gild that—

Lulu of a proverb above reproduced. "The daughter of a crab does not give birth to a bird," nor does a crab in the electrical or any other industry beget new customers nor for long hold his old ones.

A crab is a crab in any language. In business, he is the man who spends all of his waking hours in "cussing" conditions, knocking the business, hating his competitors and—

Ringing up "No Sale" on the cash register.

He is the Fish who clambers on the housetops and tells the World that—

Publicity is all bunk—advertising is a waste of money and that—

Quality and Service "never got nobody nothin'."

You have seen him in action, I am sure. Like any other crab, he crawls backwards and he drags his business after him; drags it into a dark hole and pulls the hole in after him—and—

It always takes a sheriff, a receiver and 40 indignant creditors to drag him out.

The crab will not concede that "Good and evil are rewarded at last—though we travel far and high there is no escape." In fact, the crab in business will believe nothing, except that—

He and his ways are right and that the rest of the World is out of step—but—

Glory be to Allah, Abou Ben Adhem, Rodolph Valentino and the rest of the prophets—

A crab, like a yellow journal, is always wrong.

Quite recently, one of the few crabs in the electrical game in my town said to me:—

"Why should I give you a story about my business? Why should I give you a picture of my shop? Why should I tell you how I sell domestic appliances? Why should I waste my time reading trade journals?"

And, when I got the dice, an hour or two later, I said this and left him flat:

"Friend, there is lots of work to be done in this World and I am supposed to do a fair portion of it. Today I am especially busy. There are many bright men in your line who are waiting to see me and I am truly sorry I have taken up your time and wasted my own. My advice to you, freely given is—

"Strap on your climbers, shin up the tallest pole in town and stay there, else—

"Some day, you will be run over by a hearse."

I know and you know that one twig cannot for long dam a stream and that—

The play is bigger than the actors, and the men in the electrical industry who are walking in the light of intelligence and efficient conduct of affairs have the Dumb Davids—

Working "at" the business—

Outnumbered 1,000 to 1—so—

Why fret farther or waste more white space?

Page the bouncer and away with the wretches—

Let's Go.

Cooperating to Sell the Idea of Electric Cooking

Message of Cooking by Electricity Is Not Dimmed by Rival
Salesmen in Telling Merits of Their Ranges

"Sell the idea of electric service for the cook stove and subject the relative merits of the products while selling the principle of electric cookery to the prospective customer." This was the motto of A. R. Wooley, of the Edison Electric Appliance Company and M. E. Lanning, Westinghouse Electric & Manufacturing Company representative, when they worked side-by-side in displaying the advantages of cooking by electricity at the Colorado Western Slope Fair held at Montrose, Colo., recently.

These two men, who have their headquarters in Denver, have realized that to secure success for the electric range, the public must be informed of the advantages of cooking by electricity instead of with the old-fashioned coal or gas stove. They felt that an educational campaign must first be conducted which will promote the electric range idea, as housewives are loath to give up anything which they have used, for a device which they have not been able to try out in their own homes. Not many years ago a woman in one of the western states refused to have her house wired for electricity, even though the central station offered to do the job at cost and supply the current for one dollar a month, because "a woman had been killed by electricity in New York."

This same state of mind, which tends to influence the housewife against trying a new article for herself, is present today in a modified form. The advantages of the new product must be shown before any attempt to sell any particular brand of that product can successfully be made.

Once that the idea of cooking by electricity is sold to the public, attempts to sell particular brands of electric ranges will prove successful. When the merits

of the electric range, as an idea, are sold to the public, business for every member of the trade interested in the manufacture and sale of the ranges will profit. To secure this end, it is to the advantage of rival manufacturers, jobbers, and dealers to cooperate in selling the idea before any effort is made to sell any particular design of range. Attempts to market any product by criticising another similar device which may have a minor change in design, only tend to weaken the sales argument for the product, as such, and tend to prevent the purchase of either design.

A realization of this fact brought Mr. Wooley and Mr. Lanning to the point of cooperating at the Colorado fair to the extent that they cooked, baked and talked electric cookery together. Their work was to demonstrate the advantages of cooking by electricity.

The thousands of people who visited the exhibits at the fair were given an opportunity to watch electric ranges in operation. Bread was baked for their inspection, while the real advantages of the electric range were discussed by the rival salesmen. The relative merits of automatic controls, and sheath wire elements found in the respective ranges was a secondary consideration. The real message was selling the idea of electric cookery.

Christmas crowds who come in at the last minute and stand in line to be waited upon are the trial of every dealer. It is apparently impossible to provide clerks or floor space sufficient to handle them satisfactorily. One dealer solved this problem, not by adding more clerks on the floor, although of course he had as many there as could work advantageously, but rather

by strengthening his organization back of the clerks, so that the man waiting on the customer need take as little time as possible with any one individual. There was always a boy at hand to take the order blank and article to the wrapping desk and follow it through, so that once the customer's wishes were satisfied, the clerk could go on to the next. Besides making more effective the use of the time of the higher paid salesman, this helped to solve the problem of the impatiently waiting customer, because it kept the salesman always in his sight—not continually disappearing into the rear of the store on business not clear to the man waiting his turn.

Motion in the window is always a drawing card. The Christmas window display offers special opportunities in this line. A Santa Claus sleigh which enters from one side of the window and moves swiftly across to an exit on the other, a toy train or a galaxy of gaily colored balloons kept in motion by an electric fan offer opportunity for a great variety of effects. In case the course of the train or sleigh or other motor-driven toy is too long so that there is an appreciable wait between the time it disappears and appears again at the other side of the window, it is a simple matter to have two riders, so that one appears just as the other is disappearing.

Buying presents for the man in the family is always the most difficult of Christmas tasks. The woman shopper will appreciate a window which features those electric appliances which make especially appropriate gifts for the father or brother of the family. Grouping the articles so that one corner represents gifts for father, one for mother, one the old person of the household and another the child, will suggest possibilities to the window gazer which might otherwise not occur to her.



A. R. Wooley and M. E. Lanning, working together to sell the electric cooking idea at the Colorado Western Slope Fair

INDUSTRIAL NEWS



Oregon Company to Have Highest Head Reaction Turbine

The contract for a 35,000-hp. vertical reaction turbine has just been awarded to the Pelton Water Wheel Company of San Francisco by the Portland Railway Light & Power Company for installation in its Oak Grove plant. The unit will operate at 514 r.p.m. under an effective head of 857 ft., making it the highest head reaction turbine in the world thus breaking the record established by the 810-ft. head 25,000-hp. turbines at the Kern River No. 3 plant of the Southern California Edison Company.

Before deciding upon the reaction type of turbine, engineers of the Portland company received designs for one 35,000-hp. reaction unit, two 17,500-hp. reaction units, and two 17,500-hp. impulse units.

The new turbine will resemble the Kern River units, but, as a result of cooperation between engineering staffs of the Pelton Water Wheel Company and its associated company, the I. P. Morris department of the William Cramp & Sons Ship and Engine Building Company, will embody a number of I. P. Morris features. Among these are the disk-type guide vanes, the Moody spreading draft-tube, and the Taylor grease gun. The newly-developed Pelton rubber seal rings will be substituted for the ordinary all-metal clearance rings.

The Oak Grove plant is situated on the Clackamas River, about 53 miles from Portland. The present development is the first unit of a project that will ultimately develop 100,000 hp. from the Clackamas and its tributaries.

Electricity will be generated at 11,000 volts and will be transmitted at either 66,000 or 110,000 volts. Eighteen and one-half miles of wooden pole line will be used to connect the plant with the main line from Cazadero station to Portland. Construction is to be completed early in 1924.

Returns by Counties on the Water and Power Act

Interest in the result of the election on the Water and Power Act, Amendment No. 19 on the ballot in California, is attested by the number of inquiries received by the Journal of Electricity and Western Industry for complete returns on this measure. Since official returns will not be available until Dec. 15, a canvass was conducted which is shown below. The figures are believed to be correct, being, in most cases, the returns approved by the Boards of Supervisors in the various counties.

The tabulation below shows a ratio of 2.25 to 1 against the measure, which was defeated in every county. The YES vote was 239,524, 30.8 per cent of the total, compared with a NO vote of 536,624, or 69.2 per cent. The heaviest vote against the measure was in Alpine and Orange counties, about 7 to 1. Other ratios are, San Francisco, 1.38 to 1; Los Angeles, 2.7 to 1; Alameda, 2.3 to 1; Fresno, 2.45 to 1; Sacramento, 1.1 to 1; and San Joaquin, 2.4 to 1.

	YES	NO
Alameda.....	25,990	58,254
Alpine.....	6	42
Amador.....	455	1,536
Butte.....	2,414	6,114
Calaveras.....	681	1,430
Colusa.....	550	1,478
Contra Costa.....	4,011	9,693
Del Norte.....	112	490
Eldorado.....	857	1,489
Fresno.....	8,669	21,108
Glenn.....	973	2,688
Humboldt.....	1,830	6,712
Imperial.....	1,701	3,331
Inyo.....	824	1,429
Kern.....	4,731	11,217
Kings.....	700	4,658
Lake.....	520	977
Lassen.....	435	1,428
Los Angeles.....	42,100	113,545
Madera.....	1,386	2,072
Marin.....	2,299	5,849
Mariposa.....	219	657
Mendocino.....	706	3,964
Merced.....	1,558	3,875
Modoc.....	120	1,391
Mono.....	58	134
Monterey.....	1,483	4,973
Napa.....	468	1,477
Nevada.....	961	2,158
Orange.....	2,902	14,798
Placer.....	2,140	2,997
Plumas.....	417	680
Riverside.....	2,843	6,948
Sacramento.....	11,880	13,054
San Benito.....	686	1,837
San Bernardino.....	3,985	13,909
San Diego.....	9,377	18,391
San Francisco.....	53,110	73,169
San Joaquin.....	5,390	12,877
San Luis Obispo.....	1,464	4,647
San Mateo.....	3,319	7,242
Santa Barbara.....	1,598	6,959
Santa Clara.....	7,517	18,270
Santa Cruz.....	1,850	5,703
Shasta.....	1,287	3,333
Sierra.....	135	362
Siskiyou.....	2,021	2,847
Solano.....	3,234	6,303
Sonoma.....	2,685	11,299
Stanislaus.....	3,987	6,590
Sutter.....	750	1,867
Tehama.....	1,357	2,296
Trinity.....	231	690
Tulare.....	3,787	12,515
Tuolumne.....	1,163	1,666
Ventura.....	1,060	5,901
Yolo.....	1,546	3,249
Yuba.....	986	2,060
Totals.....	239,524	536,624

Final Agreement Drawn Up By Colorado River Commission

After a series of formal sessions at Santa Fe, N. M., which commenced on Nov. 9, the Colorado River Commission, composed of representatives of the various states in the Colorado River basin and headed by Secretary of Commerce Herbert C. Hoover, has evolved a pact

governing all phases of the distribution and use of the waters of the river among the several states affected. The pact has yet to be ratified by the state legislatures and Congress before it becomes effective.

The agreement reached at the Santa Fe meeting marks the conclusion of a series of hearings held in several western cities at which data governing every phase of the development of the river was presented by the states themselves and by interested parties. The purpose of the 2,000-word compact as set forth in its initial paragraph is "to provide for the equitable division and apportionment of the use of the waters of the Colorado River system; to establish the relative importance of the beneficial uses of the waters; to promote interstate comity and to remove causes for present and future controversies."

The compact divides the river basin into two divisions, the upper including Colorado, Wyoming, Utah and New Mexico, and the lower, California, Arizona and Nevada. The agreement apportions in perpetuity to each section the exclusive beneficial use of 7,500,000 acre-ft. of water per annum, including the water necessary to supply the existing rights. The lower basin is also given the right to increase this amount 1,000,000 acre-ft. per annum. In case of an international treaty involving Mexico and the United States, any water which might be set aside for the use of the former will be supplied from the surplus over and above the said 15,000,000 acre-ft. included in the compact. Further apportionment of unapportioned water may be made at the end of 40 years.

The use of water for power purposes is made subservient to agricultural uses while the commission does not recognize the navigability of the river. Should Congress not agree to this clause, it may be stricken out without changing other clauses of the compact.

Through commissioners whose acts are subject to legislative approval provision is made for the settlement of future interstate controversies. Provision is also made for the setting up of a commission of state and national water officials for the collection of information and the measurement of the flow of the river.

The agreement was signed by the following officials:

Secretary of Commerce, Herbert C. Hoover, representing the U. S. Government; W. S. Norviel, Arizona; W. F. McClure, California; Delph E. Carpenter, Colorado; J. G. Scrugham, Nevada; Stephen B. Davis, Jr., New Mexico; R. E. Caldwell, Utah, and Frank C. Emerson, Wyoming.



Northwestern visitors and some of the hosts at the opening of the Copco plant of The California Oregon Power Company, Nov. 5. Sitting, from left to right: W. H. Crawford, manager, department of industries, Portland Chamber of Commerce; I. T. Sparks, district freight and passenger agent, Southern Pacific Company; C. P. Osborne, superintendent, light and power, Portland Railway Light & Power Company; J. C. Thompson, assistant treasurer, The California Oregon Power Company; Will Baldwin, Baldwin Hardware Company, Klamath Falls, Ore.; T. G. Bradley, generating superintendent, The California Oregon Power Company. Standing, from left to right, first row: G. E. Quinan, chief electrical engineer, Puget Sound Power & Light Company; J. Pardee, The California Oregon Power Company, Medford, Ore.; J. A. Ormandy, assistant general passenger agent, Southern Pacific Company, Portland, Ore.; F. M. Redman, Western Electric & Manufacturing Company, Portland, Ore.; L. R. Elder, manager, small motors department, General Electric Company, Portland, Ore.; F. V. Sames, representative, Allis-Chalmers Company, Portland, Ore.; O. W.

Mielke, president, Portland Chamber of Commerce, Portland, Ore.; W. P. Ellis, secretary, Public Service Commission of Oregon; Ed. Searing, construction engineer, Portland Railway Light & Power Company, Portland, Ore.; E. F. Pearson, engineer, Northwestern Electric Co., Portland, Ore.; H. L. Walther, superintendent, The California Oregon Power Company, Medford, Ore.; H. H. Schoolfield, chief engineer, Pacific Power & Light Company, Portland, Ore.; A. M. Clark, manager, Columbia Steel Company, Portland, Ore. Second Row: Will T. Neill, rate engineer, Pacific Power & Light Company, Portland, Ore.; R. M. Boykin, vice-president and general manager, North Coast Power Company, Portland, Ore.; L. A. McArthur, vice-president and general manager, Pacific Power & Light Company, Portland, Ore.; E. F. Whitney, manager, lumber industries department, General Electric Company, Portland, Ore.; J. D. Beebe, rate engineer, Public Service Commission of Oregon; W. M. Shepard, general agent, The California Oregon Power Company, Medford, Ore.

San Francisco Will Govern All Radio Installations

Complete charge and supervision of all radio receiving and transmitting sets in San Francisco is now in the hands of the department of electricity of the city. This move by the board of supervisors has been made necessary, because of several accidents due to improvised radio set wirings.

According to Ralph W. Wiley, chief of the department, all persons, firms, or corporations, installing or maintaining radio antennae, must file an application for a permit before installation. The new order went into effect Nov. 15 and all persons who had installed radio sets prior to that time are to be given until Dec. 15 to secure a permit.

In the new rules, which provide for a minimum inspection fee of \$1, it is stated that antennae must have a vertical clearance of 8 ft. over any roof and construction must be of substantial nature. Attaching wires or supports to fire escapes is forbidden.

Christmas Opening Is Scheduled for New Don Pedro Dam

Work on the Don Pedro dam, the \$4,000,000 California project of the Modesto-Turlock Irrigation District, is being rushed along in order that the opening ceremonies may be held by Christmas Day. More than 500 men are now at work and according to D. H. Duncanson, superintendent in charge of construction, the remaining 30,000 cu. yd. of concrete can be poured in time to permit the holding of ceremonies at the proposed time.

It is also expected that, by the time water is needed for the 1923 crop season, the two districts will have the benefit of the 28,000 acre-feet, which the dam will impound. When completed the dam will be 176 ft. long at its base,

on the river bed, 285 ft. high, and 1,000 ft. long at the top.

Two transmission line towers have recently been put in place on the Don Pedro end of the line from Don Pedro to Turlock. The first towers at the other end of the line were placed some time ago. This line will carry the power which will be generated at a power house to be erected at the foot of the dam on the Turlock side.

Marconi Company Plans to Erect Station in Vancouver

The Marconi Wireless Telegraph Company of Canada, Ltd., has made application to the Dominion government for a license to erect and operate a continuous-wave wireless telegraph station of sufficient power to communicate directly with Great Britain, Australia, and the Orient. It is estimated that the plant will cost in the vicinity of two million dollars.

The Vancouver station is only one of several plants that the Marconi company proposes to erect in Canada. Other plants will be situated at Winnipeg, Toronto and Montreal, but the Vancouver plant will be by far the largest of the group. The company proposes to spend five million dollars on these plants. If the necessary license is obtained in time, work on the Vancouver plant is to be commenced early in January.

The Safford Light & Power Company of Safford, Ariz., is at present enlarging its power house and will add a complete new unit to the plant. The concrete foundation has already been laid.

The realty board of Porterville, Calif., has prepared a resolution asking the city trustees of Porterville to acquire the distributing system of the Southern California Edison Company in that city.

Vancouver Residents Will Get Lower Electric Rates

Light rates in the city of Vancouver will be reduced on Jan. 1, 1923, from 6 cents to 5 cents per kw-hr. by reason of a franchise agreement passed between the city council of Vancouver and the British Columbia Electric Railway Company.

The agreement modifies the existing franchise as regards street car fares by continuing the 6-cent fare for three years longer and while the company agrees to the lighting rate reduction mentioned as a return for this concession, other clauses are that the company must within five years spend \$250,000 on placing light and power wires underground; that it relay three miles of car track with permanent construction at a cost of \$105,000, and that it pay \$5,000 a year to the city for maintaining the pavements between the car tracks.

A further clause provides for motor bus transportation in the outlying sections, the company paying one-half the anticipated deficit up to the sum of \$5,000 and the city paying the remainder of the deficit out of the percentages on gross fares received from the company. In the districts mentioned, the city is interested as a large owner of property which has reverted to it at tax sales.

The agreement covers only the city of Vancouver which has only two-thirds of the population of Greater Vancouver. In the suburban districts higher lighting rates and fares are charged and these will be subject to further agreements.

While the lighting rates are not subject to revision, the street car fares will be at the end of three years and at that time, failing an agreement, the company and the city may resort to arbitration in the usual way.



San Joaquin Light & Power Corporation's building, being erected in Fresno, Calif.

Ten Story Office Building for Fresno Power Company

A building, to be the tallest in the city, is now being erected in Fresno, Calif., by the San Joaquin Light & Power Corporation. The new structure is to be ten stories in height and will cover an area 150 x 75 ft. A basement will be under the entire building.

The new building, which has been the dream of A. G. Wishon, vice-president and managing director of the company, is now being erected at the corner of Tuolumne and J streets. Ground was broken for the structure on Sept. 27. It will be of Class A construction throughout with a tinted brick and terra cotta exterior face. The estimated cost of construction has been placed at \$600,000, and the building should be completed by Jan. 1, 1924.

According to projected plans the building, when completed, will be the most brilliantly illuminated in the southwest. Flood lights in colors are to give the brick and terra cotta facing a spectacular brilliancy, making it visible from points several miles from Fresno. A large electric sign to be placed on the roof will be illuminated every evening.

The San Joaquin Light & Power Corporation and its subsidiaries will occupy the entire building, except one floor and thirteen offices on another floor, which will be rented until the growth of the company business requires these offices for its own use. The Valley Electrical Supply Company will occupy the first floor, leaving room for the consumers' counter, where bills of the power company may be paid. The other companies to be housed in the new building are: the Fresno City Water Corporation, the Midland Counties Public Service Corporation and the Bakersfield & Kern Electric Railway.

The tenth floor will be devoted to a large room, where meetings and entertainments may be held, a library, kitchen, committee rooms and an auditorium. It is the purpose of the company to have the floor open to the employees at all times. A promenade ten feet wide will be constructed around this floor from which it will be possible to get a good view of the city and the surrounding country.

At the present time the departments of the Fresno office are scattered in many buildings. Among the departments to be located in the new building

are the Executive, Finance, Research, Operating, Power Development, Legal, Supplies, Service and Sales, Personnel, and Medical Divisions.

Commission Orders Company to Reduce Power Rates

The public utilities commission of Idaho has ordered a reduction of 25 per cent on all rates of the Kootenai Power Company of Pocatello, Idaho. The reduction is to be made after all discounts now applicable are taken, but the minimum now in effect shall not be disturbed. The company is ordered to file a new schedule of rates with the commission by Dec. 1.

The commission found that the total value of all property used was \$141,000 instead of a reproduction cost as submitted by an engineer, of \$167,701. The commission also found that the total annual allowance for maintenance and taxes should be \$41,201.33, and that the reasonable depreciation would amount to \$3,267.75.

Use Diamond Drill to Determine Character of Base Rock

To ascertain whether the rock on the proposed site will support a dam, diamond drills are being used to secure samples of the base rock at the site of the proposed Pine Flat Water Storage dam, on the Kings River, near Piedra, Calif. A series of twenty-five holes will be drilled, varying in length from 30 to 150 ft.

Dr. James P. Smith, of Leland Stanford Junior University, made a geological survey of the site during the past summer and his report states that the erection of a dam there is entirely feasible. Natural rock walls will aid in forming the storage reservoir.

Permit to Develop Utah River Subject of Application

W. F. Holt, of 2118 South Harvard Boulevard, Los Angeles, has filed application with the state engineer of Utah for the use of 50 sec.-feet of water from the east fork of the Sevier River, to be used in the development of power in connection with a reclamation project of considerable proportions near Widdsoe, in Garfield County.

It is planned to convey the water in a flume for 2,200 ft. and then to conduct it through 600 ft. of 48-in. pipe, leading it over a 6-ft. Pelton wheel under a head of 78 ft. This is calculated to develop 376 hp. for pumping purposes and to supply electrical energy to the communities of Widdsoe and Antimony. A masonry and concrete dam is to be used.

The right of the people to grant franchises in the City of Denver has been held to be theirs and theirs only in a recent decision of the Supreme Court of Colorado. The city council of Denver granted a "revocable charter" to the Denver Tramway Company to re-route its lines in the city and, according to the latest decision from the state courts, the city council has no right to grant any permit or license for such purposes. The court held that it would be necessary to obtain a new franchise from the people by means of the ballot.

Eighty Mile Transmission Line Is Being Constructed

Eighty miles of transmission line are being constructed and two substations are being rebuilt and made larger under the plan of the San Joaquin Light & Power Corporation of Fresno, Calif., to provide additional means of supplying power to the Midland Counties Public Service Corporation at its Santa Maria substation. A private telephone line 65 miles long is also being placed by the power company.

The construction program will call for an expenditure of about \$550,000 and construction is due to be completed by Feb. 1, 1923. The new line will connect the Midway steam plant of the San Joaquin Light & Power Corporation with the Santa Maria substation of the Midland company.

The size of the McKittrick substation of the San Joaquin company will be increased in order that greater transformer capacity may be obtained. The present yard structure of wood will be replaced by steel and concrete. New transformers will have a capacity of 15,000 kw. and will "step down" the 110,000-volt current from the Midway plant to 70,000 volts for transmission to Santa Maria, Henrietta and Taft. In addition other transformers will bring the voltage down to 11,000 volts to take care of the oil field load around McKittrick.

The Santa Maria substation of the Midland Counties company is being reconstructed to provide for the entrance of four 70,000-volt lines. The Betteravia steam plant near Santa Maria will also be connected with this substation.

Portland Baking Company Orders Six Electric Trucks

An order for 6 one-ton Ward electric delivery trucks and a very complete General Electric charging equipment was recently placed by the United States Baking Company of Portland, Ore. Each truck will carry an Edison battery of seventy G-9 cells requiring a 4¼-hr. charge at 67½-amp. rate.

The 75-kw. charging set is of sufficient capacity to care for the six batteries simultaneously as well as provide reserve capacity for future increases. The motor generator, which will be placed in the basement, is equipped with automatic starter controlled from the ground floor where the switchboard and trucks will be located. The switchboard consists of a.c. line panel, d.c. generator panel, and six charging sections.

This equipment, when it is installed, will be one of the largest up-to-date electric truck layouts in the city of Portland.

Connecting Line to Be Built by Idaho Railroad Company

To give the Twin Falls district a direct outlet to Pacific Coast ports and to supply railroad connections for the new copper mining district of Contact, Nev., the Idaho Central Railroad Company will complete within a year's time a 90-mile railroad from Twin Falls, Idaho, to Wells, Nev., according to E. W. Mason, general manager of the Western Pacific Company. The Idaho

company is being backed by the Western Pacific Company.

At Wells the new line will connect with the main lines of the Southern Pacific and the Western Pacific. This connection will afford much better transportation facilities to the southern Idaho territory, as in the past freight had to be routed east to Salt Lake City, Utah, and then west again to Pacific Coast ports.

New Flood Protection Plan for Pueblo Is Presented

A plan to put the Arkansas River back in the channel which it occupied years ago, has been proposed by Arthur E. Morgan, the engineer who is endeavoring to provide flood protection to Pueblo, Colo. The original plan to put the river along the bluffs opposite the Union station was opposed by the railroads entering the city. The present plan seems more feasible.

Mr. Morgan's plan is to provide a channel 12,600 ft. long, 200 ft. wide, 27 or 28 ft. deep, and one which would allow the flow of 125,000 sec.-feet of water. This amount of water is nearly double the quantity that caused the damage to Pueblo in 1921. A 15-ft. retaining wall would separate the river from the station and freight yards.

Should the new plan be adopted it would permit the removal of eight bridges now in use in the city. The present station and ten tracks south of it would not be disturbed and united freight yards would be provided. The project would take about four years to complete and would cost in the neighborhood of \$4,000,000.

Power Permits Requested from Federal Commission

The application filed by the City of Los Angeles, for license for a proposed power house to be built on its aqueduct from Owens River to Los Angeles, is the largest western application received by the Federal Power Commission in the three-weeks period ending Nov. 4. The Los Angeles application states that the city plans to erect a power house to have an approximate capacity of 64,000 hp. at a point known as Haiwee Narrows, about two miles below the Haiwee Reservoir, in Inyo County, Calif.

An application for a preliminary permit for a combined power and irrigation project, including a dam and reservoir, on the headwaters of the North Fork of the Cosumnes River, near Placerville, Calif., has been filed by M. C. Seagrave. A canal 5 miles long will be constructed to a power house with an installed capacity of approximately 13,000 hp. A portion of the power will be used for pumping for irrigation purposes and the remainder will be sold to public utility companies.

Another application received by the Federal Power Commission, was that of the Home Power Company, of Alaska. This application is for a preliminary permit for a proposed project with capacity slightly in excess of 100 hp. The proposed installation will supplement the existing power supply of the company, especially during the winter months when the water flow is low. The project is to be located on the North Fork of the Skagway River, about 5 miles from the town of Skagway.

Colorado Business Flourishing, State League Report

That business in general is flourishing in Colorado is reflected in a report recently compiled by the Electrical Co-operative League of Denver. Although normal conditions have not returned to every line, including the electrical contractor's business, indications, according to the report, point to a rapid recovery and one that holds out unusual promise for the new year.

Government statistics on Colorado industries, labor, and transportation along with municipal and state reports as collected and digested by the League, corroborate statements made by prominent bankers and business men that Denver especially has in many respects returned to the boom days of 1920, but in a more solid and permanent manner. The bank clearings for the months of October alone exceeded the high month in 1921 by nearly twenty-five million dollars, the total clearings reported having been \$158,112,921.

The federal department of labor report is quoted to the effect that the employment situation is steadily improving and that ample openings are to be found in Denver and vicinity for all available workers. Especially in the building trades, because of the unabated continuance of new construction, a moderate shortage of craftsmen has resulted.

The city building department of Denver reported the issuance of building permits during October in the amount of \$1,211,300 and one of the federal government reports was authority for anticipating the starting of nearly two million dollars of new construction work in the 30 days following.

The figures compiled by Postmaster Frank L. Dodge of Denver likewise show a marked increase, according to the report, having totaled nearly a quarter of a million dollars in receipts during October, an increase of 11.2 per cent over the same month in 1921.

Denver holds a preponderating lead in the matter of savings deposits, exceeding all other cities in the tenth federal reserve district, with a total of \$47,275,514 by 81,031 persons.

One disappointing feature of the November election is the rejection, by the voters of the state, of the proposed constitutional amendment providing for the supervision, by the public utilities commission, of all public service companies except those municipally owned. Although given splendid support in most sections of the state, its failure was mainly attributed to campaigns by certain newspapers. Between five and six million dollars would have been released immediately for much needed extensions and other improvements by telephone and central station companies, it is understood, had the amendment carried.

All electrical jobbing houses in Denver are reported as being optimistic in view of anticipated as well as present business. Additions are being made to their sales forces and warehousing facilities are being increased to protect against threatened shortages in the supply of wiring devices and materials. Their appliance sales are picking up and a healthy holiday business is indicated.

Available Water Supply Topic of Report to Commission

A statement of facts and recommendations, concerning the available water supply of the state of Idaho, has been prepared by W. G. Swendsen, Idaho state commissioner of reclamation, and has been sent to the Federal Power Commission at Washington. The purpose of the report is to give the commission accurate information on the demands of the state for irrigation purposes and on the power developments that are possible on the Snake River and its tributaries.

The report was prepared as an answer to the application of the Pacific Power & Light Company, of Portland, Ore., for power permits on the Snake River between Weiser, Idaho, and the point where the river crosses the Washington state line. A map which accompanied Mr. Swendsen's report shows that nine-tenths of the state is affected by the application of the power company to erect power plants along the river. According to Mr. Swendsen, 85 per cent of the water available for power at the sites mentioned by the power company in its application, originates within the boundaries of Idaho.

Agriculture is the leading industry throughout the southern part of the state and should be given preference in the use of water there, according to the report. In addition it is stated that on account of the origin of the water of the Snake River, any development should be on the Idaho side of the river and the power resources should be considered as those of Idaho.

Building Activity Demands Much Electric Equipment

Los Angeles is absorbing a greater volume of electrical supplies, material and equipment than any other city in the United States as a result of its unprecedented building activity, according to a survey which has been made by the California Electrical Cooperative Campaign in cooperation with various electrical manufacturers. New homes are absorbing an average of \$750,000 worth of wiring supplies and equipment monthly.

This sum was arrived at by the application of average figures which were recently compiled on the electrical equipment of new homes which were being erected in southern California. It is estimated that the fixtures in the average home cost approximately \$75 while other equipment costs \$125. Building records show that there are an average of 3,000 new homes being erected monthly in the city of Los Angeles alone. This does not include the homes in the surrounding territory nor does it include flats, apartment houses or double bungalows. Industrial and office buildings are not taken into consideration.

Figures for the last four years reflect the remarkable increase in building activity in Los Angeles. In 1919, 13,344 permits with a valuation of \$28,253,619, were issued. In 1920, the total jumped to 25,555 permits and a valuation of \$60,023,600. Last year, the former record-holder, closed with a total of 37,206 permits, and a valuation of \$82,761,386. It is estimated that the number of permits this year will closely approximate

50,000, and that the valuation will be in the neighborhood of \$110,000,000.

The great increase in building activity is illustrated in the growth, from month to month, in number and value of building permits from January of last year to the present month. The figures are as follows:

	1921	1922
January	\$3,301,714	\$ 7,975,168
February	3,131,670	7,579,798
March	6,915,216	10,964,829
April	7,250,571	12,959,686
May	7,433,760	9,327,504
June	6,269,546	10,652,265
July	5,503,363	8,064,018
August	7,015,861	11,523,891
September	8,303,665	10,267,894
October	9,781,394	*10,164,959
November	8,685,775	.....
December	7,975,168	.....

*—To October 26.

Records show that the number of homes constructed during the first ten months of the year is approximately 31,000. In these homes lighting fixtures valued at \$2,325,000 have been installed while wiring supplies and other materials to the value of \$3,875,000 were used. It is estimated that almost the same sum has been spent for apartment houses, flats and double bungalows.

Sales of household appliances are also being reflected in the number of new homes which are being erected. Practically all of the homes are being constructed with adequate laundry space and the number of convenience outlets being installed is mounting monthly. Sales of electric ranges are gradually increasing and are expected to be stimulated by campaigns which the manufacturers are planning or have instituted.

Construction of Mills and Town Started by Lumbermen

The successful floating of a bond issue of \$9,000,000 has been announced by R. A. Bell, chairman of the Long-Bell Lumber Company of Kansas City. The company has purchased some 6,000 acres of land from the Weyerhaeuser Timber Company standing near Kelso, Wash., and will erect large mills at this point. It has been announced that the mills will have a capacity of 600,000,000 ft. annually and will be electrically driven throughout. The plans call for a turbo-generating unit of 25,000-kw. capacity. Erection of the plant involves much dredging and dyking and construction of a bridge over the Cowlitz River.

The great project of the lumber company is well under way. A new town-site as well as a new mill has been planned by an expert, and a large force of men is engaged laying the foundations for the two enormous sawmills; a 6-story hotel to cost \$350,000; erecting scores of homes and business houses; street grading and sewer digging. The Port of Portland dredges are throwing up a 33-ft. dike and have already completed several thousand feet. The dike will be 15 miles in length when completed.

The California Oregon Power Company, with head offices in Medford, Ore., has filed an application with the state engineer for diverting water from the North Umpqua River for power purposes. Three separate divisions are included in the application.

Books and Bulletins

Steam-Engine Principles and Practice

Edited by TERRELL CROFT, consulting engineer; assisted by the following staff of contributors: EDMUND SIROKY, H. C. CROFT, A. J. DIXON, and E. R. POWELL. 513 pages, 5½ by 9 in., 547 illustrations. \$3.50. McGraw-Hill Book Company, Inc., New York.

There has been a long-felt need for a practical book which would contain information that an operating engineer or plant superintendent requires concerning steam engines. This book contains data that will enable the reader to select, operate, care for and repair steam engines properly and to make a study of how to improve their economy. The general order of treatment of the subject is excellent. The text starts with the functions and principles of the steam engine, followed by a division on nomenclature and classification. The uses of indicators, the valves and governors, condensers, multi-expansion engine, and engine efficiencies are treated in order. Testing, management and operation, repair and selection of engines are also considered in detail. The book closes with a thorough treatment of lubrication. Throughout the text principles which are presented are explained with descriptive expositions or with worked-out arithmetical examples. Problems and questions are included for helping the reader. The volume may aptly be called a practical book for a practical man.

Electric Transients

By C. E. MAGNUSON, Professor of Electrical Engineering, and Director of the Engineering Experiment Station, University of Washington; A. KALIN, Instructor in Electrical Engineering, University of Washington, and J. R. TOLMIE, Instructor in Electrical Engineering, University of Washington. 6 by 9 in., 196 pages, 161 illustrations. \$2.50. McGraw-Hill Book Company, Inc., New York.

Outlining the introductory lecture and laboratory course given for more than twelve years at the University of Washington, the book aids the student in gaining clear concepts of the fundamental principles of electric transient phenomena and their application to quantitative problems. The course is elementary with emphasis placed on the physical properties of electric transients. The text is illustrated and supplemented by a large number of oscillograms of transients that occur in the various types of machines and electric circuits in common use in electrical engineering laboratories. The problems are based on quantitative data obtained from laboratory experiments under circuit conditions that may easily be reproduced by the student. Transient electric phenomena are commercially important in the operation of large and complex electric systems, and a knowledge of the fundamental principles of electric transients and their application to the solution of quantitative problems are highly essential to the successful operation of large power and communication systems.

Meetings

Electrical Association Executive Committee to Meet

A meeting of the executive committee of the Pacific Coast Electrical Association has been called for Dec. 15 at Hotel Del Monte. At this time President James B. Black will outline his ideas for the coming season, and details of the convention next June will be discussed. The members of the executive committee are James B. Black, L. M. Klauber, William Baurhyte, J. B. Anthony, Samuel H. Taylor, A. B. West, G. E. Arbogast, R. A. Balzari, S. Waldo Coleman, E. B. Criddle, H. L. Harper, A. N. Kemp, F. A. Leach, Jr., R. S. Masson, H. R. Noack, Robert Sibley and A. Emory Wishon.

Lumbermen's President Addresses Joint Electric Meeting

At the regular monthly joint meeting of the Portland sections of the A.I.E.E. and the N.E.L.A. held at the University Club on Nov. 14, Norman F. Coleman was the principal speaker. Mr. Coleman is the president of the Loyal Legion of Loggers and Lumbermen and gave a most instructive talk on the subject, "Giving Labor the Place to which It Is Entitled."

Mr. Coleman was well qualified to speak on this subject as he has been directly responsible for a large share of the success met in solving labor problems in the Northwest lumber district. The organization known as the "4-L's" started during the war when a group of loyal American citizens engaged in lumbering determined that labor disputes causing lumber shortage must stop. The idea has grown until it now covers the entire Northwest. Agreements are made between the owners and workers, whereby the workers have a part in deciding those things which vitally affect them. Most gratifying results have been obtained.

Dr. Benjamin S. Haywood, pastor of the Wilshire Methodist Church, was the speaker at a recent meeting of the Electric Club of Los Angeles. Dr. Haywood has recently returned to Los Angeles from a four months tour of Europe and the Holy Land. His talk dealt with the relation of the electrical industry to the rest of the world. Two musical numbers were included in the program presented the members of the club.

W. S. Murray, consulting engineer of New York, addressed the Spokane section of the American Institute of Electrical Engineers and the Associated Engineers of Spokane at a joint meeting held at the Davenport Hotel in Spokane, Wash., recently. Mr. Murray is director of the Super-power Survey and stopped over in Spokane on his way to the East. The meeting was well attended by the engineering fraternity of Spokane and Mr. Murray's audience was greatly interested in the talk which was presented by the eastern engineer.

Denver Radio Dealers Meet at Instruction Conference

Nearly fifty radio jobbers in the Rocky Mountain states attended the three-day instruction conference held under the auspices of the Denver Radio Service Bureau at Denver, Colo., Nov. 16-18. The conference was held at the Colorado National Guard broadcasting headquarters.

The discussion during the meeting covered topics of mutual benefit to retailers and jobbers. The purpose of the conference was to give the dealers a better knowledge of radio merchandising and also of the working of the equipment. Plans for cooperative advertising campaigns were also discussed.

The Denver jobbing firms which have joined to make the Denver Radio Service Bureau are: the Hendrie & Bolthoff Manufacturing Company, the Reynolds Radio Company, the Mine & Smelter Supply Company, the Rocky Mountain Radio Corporation, and the Winner Radio Corporation.

Radio Bureau Is Organized by Los Angeles Jobbers

As an outgrowth and development of the Los Angeles Broadcasting Association, the Los Angeles Radio Bureau has been formed by the radio jobbers of the southern California city. The bureau has for its main objects the advancement of the interests of radio, the fixing of standards, the convincing of the public that radio is a utility and not a toy, the improvement of broadcasting as a means of education and entertainment, and the more general application of radio apparatus to the daily affairs of life.

The broadcasting association planned to erect a 1,000-watt broadcasting station, but the new bureau feels that there are sufficient stations at present both erected and under construction in the southern part of California and will not erect such a plant at this time. The radio bureau will, however, keep daily distaphone records of what is being broadcasted and will endeavor in this way to offer suggestions and advice concerning the programs sent out by the broadcasting stations. A publicity campaign will also be instituted by the bureau to increase the sale of equipment.

I. S. Lesser, of the Radio Supply Company of California, is the president of the new organization. The other officers are: G. E. Arbogast, vice-president; R. E. Sadler, secretary-treasurer; T. J. Johnson, staff engineer.

COMING EVENTS

Pacific Division, National Electrical Supply Jobbers' Association—

Quarterly Meeting—Hotel Coronado
Dec. 7-9, 1922

American Society of Mechanical Engineers—
Annual Meeting—New York, N. Y.
Dec. 4-8, 1922

National Council of Lighting Fixture Manufacturers—

Annual Convention—Cleveland, Ohio
Jan. 15-20, 1923

Lighting Fixture Dealers Society of America—
Annual Convention—Cleveland, Ohio
Jan. 15-20, 1923

American Institute of Electrical Engineers—
Midwinter Convention—New York, N. Y.
Feb. 14-16, 1923

New Officers Are Selected by Rocky Mountain League

Along with the intensive development of its revised program of increasing the electrical market in the Rocky Mountain region, the Electrical Cooperative League in Denver, Colo., has elected a new group of officers for its second fiscal year. The election was held Nov. 8 after the various groups had chosen their representatives to serve on the league advisory board.

John J. Cooper, the retiring secretary and treasurer, and one of the leading spirits in the movement since the league was organized early in 1921, was elected chairman unanimously. He is the head of the Mountain Electric Company, a prominent jobbing organization, and is also interested in several Colorado central station properties. Although primarily a jobber, he is a member of the Rocky Mountain Committee on Public Utility Information.

Charles N. Shannon, a pioneer electragist, and for many years a leader of the Denver Association of Electrical Contractors and Dealers, was elected vice-chairman. R. W. Elliott, sales manager of the Albert Sechrist Manufacturing Company, was chosen as secretary, while O. L. Mackell, office manager of the Denver Gas & Electric Light Company, was designated as treasurer.

Those chosen to serve on the advisory board are: manufacturers—G. O. Hodgson, J. P. Sprunt, Jr., Alex. Hibbard and R. W. Elliott; jobbers—B. C. Watts, N. E. Lawrence, J. W. Ryall and J. C. Davidson; contractor-dealers—E. A. Scott, J. Fischer, E. C. Headrick and C. N. Shannon; central station men—R. G. Gentry, F. F. McCammon, Clarence Keeler and O. L. Mackell.

"Get-together" Meeting Is Held by Salt Lake City Men

The first of a series of "get-together" meetings of men of the electrical industry of Salt Lake City was held Nov. 9 under the auspices of the Rocky Mountain Electrical Cooperative League, at the Salt Lake Commercial Club.

A feature of the meeting was an address by E. H. Eardley, Salt Lake City executive member of the National Association of Electragists, on the recent national convention held at Cincinnati. Professor Earl J. Glade, of the University of Utah, also gave a very interesting address on the subject of "Business Economy."

P. L. Goddard, secretary of the Rocky Mountain Electrical Cooperative League, also entertained with a monologue.

An election to determine whether the city council of Tucson, Ariz., will be empowered to grant a franchise to operate a street railway on certain streets of the city, to the Tucson Rapid Transit Company will be held in Tucson on Dec. 11. The franchise which is sought contains stipulations as to the way in which the petitioning company is to maintain service and equipment.

The city trustees of Exeter, Calif., are contemplating installing twenty-eight more electroliers within the city limits.

Personals

Frederick G. Cottrell, of Washington, D. C., known to Californians as the inventor of the Cottrell Process of electrical precipitation, has recently taken over the directorship of the nitrogen research laboratory of the Department of Agriculture formerly under the direction of R. C. Tolman, who has gone to the California Institute of Technology as professor of physical chemistry and mathematical physics.

H. L. Doolittle, assistant construction engineer of the San Joaquin Light & Power Corporation, is in New York attending the meetings of the technical sections of the National Electric Light Association.

John J. Cooper, vice-president and treasurer of the Mountain Electric Company with headquarters in Denver, who recently was elected chairman, by unanimous choice, of the Denver Electrical Cooperative League and also the chairman of the local jobbers' association, is one of the pioneers in the electrical industry of the West. Twenty-nine years ago, Mr. Cooper ventured to Colorado from his native state—Indiana—and obtained a "job" as a messenger and bill collector for \$5 a week. He is now considered one of the leaders in western electrical activities, is the head of numerous Colorado public utilities and one of the most enthusiastic supporters of the Electrical League which he helped to organize more than a year ago. Mr. Cooper was born and raised on a farm and obtained but a meager education. From messenger he became a stenographer and subsequently became identified with the electrical busi-

J. O. Case, sales manager, General Electric Company, Los Angeles district, recently visited San Francisco on business for his company.

H. H. Hughes, Westinghouse Electric & Manufacturing Company's representative of Fresno, Calif., recently visited Los Angeles for a few days.

W. C. Sears, western representative, Landers, Frary & Clark, has just recently visited Los Angeles in the interest of his firm and reports excellent business in this section.

George D. Martin, comptroller of William Cramp & Sons Ship & Engine Building Company, spent a week recently at the plant of the Pelton Water Wheel Company in San Francisco. This was Mr. Martin's first trip to San Francisco since the acquisition last winter of control of the local company by the Cramp organization.

H. H. Fogwell, power salesman, Westinghouse Electric & Manufacturing Company, Los Angeles office, has just returned from a four weeks' trip to Chicago, New York, Philadelphia, and East Pittsburgh, visiting the various plants of his firm.

E. E. Nash, treasurer of the Peerless Lamp Division of the General Electric Company, has just recently arrived in Los Angeles to spend the winter. Mr. Nash is one of the pioneer lamp salesmen for the country and now divides his time between Warren, Ohio, and Los Angeles.

P. A. Powers, advertising manager, Benjamin Electric & Manufacturing Company of Chicago, has just left Los Angeles after a visit to the Pacific Coast where he attended a sales conference of his company's Pacific Coast organization.

Walter H. Seaver, manager of sales of the wire products department of the U. S. Steel Products Company of San Francisco, recently spent a week and a half in Los Angeles and Southern California, going over the territory with the representatives in that section.

Dr. Thomas Addison, Pacific Coast manager of the General Electric Company, San Francisco, recently visited Los Angeles and other points in southern California.

W. G. Johnson, manager of the Jefferson Transformer Company of Chicago, has just recently returned to that city after having visited Los Angeles and other Pacific Coast cities in the interests of his company.

Clare N. Stannard, vice-president and general manager of the Denver Gas & Electric Light Company, and V. L. Board, his assistant, have attended a meeting of officials of the Henry L. Doherty Company in New York City.

L. C. LaMont, formerly branch manager of the Butte office, Westinghouse Electric & Manufacturing Company, and more recently connected with the El Paso office of that company, has just been transferred to the Los Angeles office.

Major George Mayo, U. S. A., inspector of hydroelectric projects for the War Department, recently completed a survey of some of the hydroelectric plants in district number one, which comprises the Columbia and Snake river watersheds. His survey took him over the property of the Idaho Power Company and the Minidoka Irrigation project.

F. H. Woodward, formerly district manager of the Great Western Power Company at Oakland, has been appointed general sales manager of the company with headquarters in San Francisco, to succeed James B. Black, who has been made general manager. Harry Woodward is known to old-time electrical men in San Francisco as hav-



F. H. WOODWARD

ing served with the Edison Light & Power Company in the years 1894 to 1898 as salesman. When that company consolidated with the San Francisco Gas Company and became known as the San Francisco Gas & Electric Company, he served until 1902 as superintendent of the contract department. Following this Mr. Woodward with four others left the service of this company and became factors in the newly organized United Gas & Electric Company of San Jose, having Santa Clara and San Mateo counties as their field, and assuming the management of the Standard Electric Company of California, with offices in San Jose, as well. In 1906, following the consolidation of the United Gas & Electric Company with other properties in the bay region, he became associated with R. J. Davis and entered the jobbing business in San Francisco. In 1909 he took charge of the commercial department of the Great Western Power Company in San Francisco and in 1911 when this company took over the City Electric Company of San Francisco he was made manager of industrial sales. When the Great Western Power Company entered the Oakland field, Mr. Woodward succeeded to the management of the Alameda and Contra Costa County districts.

R. P. Schwerin, president of the Federal Telegraph Company, R. R. Beal, chief engineer of the same company, and three assistant engineers recently sailed from San Francisco for Shanghai to commence construction on three powerful radio stations which will connect the Orient with the Pacific Coast. Those accompanying Mr. Schwerin and Mr. Beal were H. F. Elliott, J. H. Wallace and D. G. Marsh. The station which will be erected in Shanghai will give transpacific communication its first uncensored service. Mr. Schwerin will remain in the Orient about three months while the remainder of the party will not return until May, 1924.



JOHN J. COOPER

ness. He is an active member of the Rocky Mountain Committee on Public Utility Information and is vice-president and treasurer of the Arkansas Valley Electric Company, the Gilpin County Light, Heat & Power Company and the Hinsdale Mining & Development Company. He is a member of the Denver Civic and Commercial Association and the Denver Athletic Club.

J. E. Crilley, Pacific Coast representative of the Habirshaw Electric Cable Company, recently visited Los Angeles in the interests of his firm.

H. K. Winterer, industrial control specialist, Los Angeles office of the General Electric Company, has just recently returned from a two months' visit in the East, visiting the factories of the General Electric Company at Schenectady, Bridgeport and Fort Wayne.

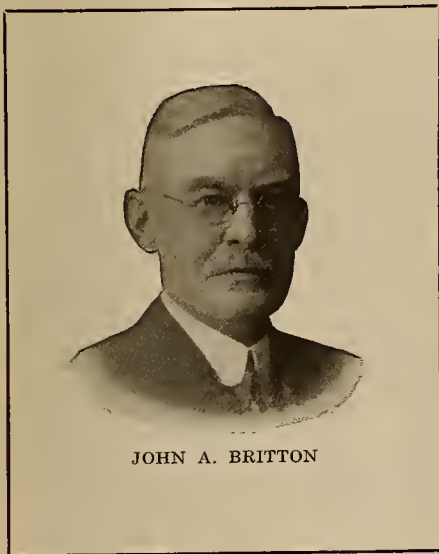
H. D. Randall, of the General Electric Company and a prominent worker in the Denver Electrical Cooperative League, spent most of last month in the East on company business.

Harry Ashcraft, a contractor, has been re-elected president of the contractor-dealers' association at Pueblo, Colo., and E. F. Stone, superintendent of the Southern Colorado Power Company, has been elected secretary and treasurer.

J. W. Johnston, treasurer of the Western Electric Company, Inc., is a western visitor. After a trip along the coast, he will return East, stopping at Salt Lake City and Denver.

Robert Kyle, of the Kyle Electric Company, and William Quandt, one of the superintendents of the Southern Colorado Power Company, recently addressed a meeting of the electrical interests in Pueblo, Colo.

John A. Britton, first vice-president and general manager of the Pacific Gas & Electric Company, has been elected president of the San Francisco Bohemian Club. Mr. Britton's election to this position further exemplifies the esteem in which he is held by his associates and friends. He is fully as active in the life of the community as he is in the electrical industry. As a citizen of San Francisco, he has served as chairman of the local chapter of the Red Cross, as Regent of the University of California, as a director of the Panama-Pacific International Exposition and as



JOHN A. BRITTON

one of the most active promoters of San Francisco's musical enterprises. His work as a public utility executive is too well known for comment. He has been active in every movement which calls for the betterment of the industry. At the present time Mr. Britton is in New York attending the sessions of the Public Relations Committee of the National Electric Light Association.

C. G. Brown, professor of electrical engineering in the collegiate department of the School of Engineering at Milwaukee, has accepted a position with the General Electric Company in the general engineering laboratories. His work will be in connection with instruments, meters and measurements. Mr. Brown is a member of the American Institute of Electrical Engineers, Society for Promotion of Electrical engineering, and the American Association of Engineers.

Robert Treat, member of the lighting engineering department of the General Electric Company, Schenectady, gave a paper on "Relays as Applied to Power Systems" before a meeting of the San Francisco Section of the American Society of Electrical Engineers recently.

A. W. Cobley, general engineer for the Westinghouse Electric & Manufacturing Company with headquarters at San Francisco, is now in East Pittsburgh on a business trip.

C. E. Blee, formerly assistant general agent for The California Oregon Power Company, Medford, Ore., has been transferred to the engineering department and given enlarged duties with the title of assistant engineer.

E. B. Powell, of Stone & Webster, Inc., of Boston, sailed recently on the Majestic to make a study of developments in European power plant practice. He expects to visit England, France and Germany.

P. W. McCauley of the Russell Electric Company, Denver, is a recent San Francisco visitor.

A. V. Thompson, assistant sales manager, General Electric Company, San Francisco, has been in Los Angeles recently, on his return from a trip East where he attended the convention of the American Electric Railway Association in Chicago.

Robert Sibley, Pacific Coast editorial director of the McGraw-Hill electrical papers, is in New York attending the annual meeting of the American Society of Mechanical Engineers, which convenes Dec. 4-7, and the council meeting of the American Society of Electrical Engineers which convenes Dec. 8.

F. G. Baum, consulting engineer with offices in San Francisco, is in the East making a study of the high tension insulator problem.

Frank E. Boyer, who has been residing in Los Angeles for the past year and a half and who was formerly manager of the General Electric Company's offices in St. Louis and Chicago, has just recently left for Honolulu on a six months' visit.

H. B. Vanzwoll, manager of Sunbeam Division of National Lamp Works of Chicago, recently spent a week in Los Angeles and southern California in the interests of Sunbeam Mazda Lamps.

O. B. Coldwell, vice-president of the Portland Railway Light & Power Company, has been East in connection with the selection of equipment for the company's new Oak Grove hydroelectric project.

C. C. Hillis, vice-president and general manager of the Electric Appliance Company of San Francisco, is in eastern business centers and while East is attending the convention of the National Electric Supply Jobbers' Association which meets at Cleveland.

T. J. Pace, manager supply sales department, Westinghouse Electric & Manufacturing Company, has been in San Francisco for a week's visit after spending several days at Los Angeles. His trip to the coast was timed to coincide with that of H. D. Shute and H. P. Davis, vice-presidents of the same company, who have been here for the purpose of holding a Pacific Coast conference with district managers.



T. J. PACE

In Los Angeles the company's new plant was inspected and at the conference at Del Monte plans were laid for the new building to be erected at Emeryville across the bay from San Francisco. Both C. E. Heise, San Francisco manager, and K. E. Van Kuran, Los Angeles manager, took part in the conference. Mr. Pace addressed both the Los Angeles and San Francisco Development Leagues while here.

Otto Knopp, superintendent of the laboratory of the Pacific Gas & Electric Company, recently returned from the East where he has been making a study of the meter problem.

H. W. Janzen has resigned from the electrification department of the Chicago, Milwaukee & St. Paul Railroad, to accept a position as sales engineer in the Seattle offices of the Pacific States Electric Company.

R. W. Elliott, newly elected secretary of the Electrical Cooperative League in Denver, has been appointed sales manager of the Albert Sechrist Manufacturing Company of that city.

Thomas F. Smith, a prominent motor man in Denver, has joined the Electrical Cooperative League in that city.

Obituary

R. L. Clarke, assistant manager of the San Diego Consolidated Gas & Electric Company, died Nov. 8 after an illness of two months. Mr. Clarke has been identified with the public utilities of San Diego for the past thirty-five years and has been with the San Diego Consolidated company since its purchase by H. M. Byllesby & Company in 1905.

Manufacturer, Dealer and Jobber Activities

Harvey Hubbell, Inc., of Bridgeport, Conn., has placed on the market a device which permits the user to operate more than one appliance at a table, using only one convenience outlet. The new table outlet is known as the Triplex Table-Tap. Three beveled T-slot outlets are arranged in multiple. The device may be fastened to the under side of a table top or onto a wall by means of screws.

Henry Hyman & Company, Inc., of New York City, has recently started the publication to be distributed to the members of the electrical fraternity each month. The new booklet is entitled *The Hylite Distributor*. Dealers desiring to receive the publication regularly can secure it by writing the publishers.

Charles D. Born, of Prescott, Ariz., has recently purchased the electrical store formerly owned by Gordon Furlong. Mr. Born will engage in the electrical contracting business.

The Johns-Pratt Company of Hartford, Conn., has recently appointed George Saylor western sales manager of the company. Mr. Saylor's headquarters will be in Chicago.

Listenwalter & Gough Company, of Los Angeles, has entered upon an extensive advertising campaign for the coming year. The company is distributing agent in southern California and Arizona for the Royal electric cleaner. Plans call for 144 advertisements in all, two to appear each week.

The General Electric Company has recently issued an informative bulletin which is entitled "Switchboard Panels and Supporting Framework." The number assigned to the bulletin is 47002 and groups switchboard panels under two general classifications, the vertical type and the bench type. Slate and marble are the two materials mentioned as being universally used for switchboard panels. The standard heights vary from 16-in. single section panels and mounted on supports 48-in. to 99-in. high; panels in three sections on supports 99 in. high. All panels have $\frac{3}{8}$ -in. bevel. To obtain sufficient mechanical strength, it is suggested, panels should be at least $1\frac{1}{2}$ in. thick with the exception that isolated panels not over 24 by 16 in. mounted on wall brackets and containing light equipment may be made of $1\frac{1}{4}$ -in. slate. The standard supporting framework for panels adopted by the Company, consists of $1\frac{3}{4}$ -in. wrought iron pipe for the uprights and $\frac{3}{4}$ or $1\frac{1}{4}$ -in. pipe for tie-rods bracing the panel to the floor. For very small isolated panels containing light weight equipment, wall brackets in place of pipe supports are sometimes used to advantage. The grille work supplied for panels is of the "basket weave," square mesh, welded to an angle iron frame. A hinged grille door with lock and key is provided at one or both ends of the board. The bulletin contains useful information for prospective buyers of switchboards.

The Holophane Glass Company, New York, has placed on the market a new lighting unit designed for use in schools, offices and stores. This new unit is of the enclosing type and lamps from the top instead of the bottom. The upper portion has accurately formed reflecting prisms designed to redirect the light downward. The lower portion has combined horizontal refracting prisms and vertical diffusing flutes. The function of these combination refracting prisms and diffusing flutes is to give the proper distribution of light and to diffuse the light so that the unit has uniform low brightness. An important feature of the unit is that it can not be overlamped, as the opening in the top will pass only lamps of the proper size. There are two sizes of this unit, No. 2170 for the 100-150 watt lamps and No. 2180 for the 200-watt lamps.

Electric Supply and Construction Company, Denver, Colo., in the development of its fixture manufacturing business, has added Les Chapman to its force of outside representatives.

The Radio Shop, of Sunnyvale, Calif., has recently established a branch factory at St. Louis, Mo. The company is engaged in the manufacture of Armstrong regenerative circuit radio equipment and the increase in demand for its products has necessitated the opening of the new branch. A. B. Dorman, eastern manager for the company, has established his office in St. Louis and has announced that the Echo Radio Corporation has been organized to take over the national distribution of the products of the California company.

The National X-Ray Reflector Company, of Chicago, has recently published three new leaflets describing its line of adapters, luminaries and reflectors. These leaflets are Nos. 377, 378 and 379. A description of each device and views of actual applications are presented in the leaflets.

George Richards & Company, Chicago, has recently placed on the market the Hemco Electric Health Pad, a new convenience device for the sick room which has several attractive features. The new pad is packed in a well designed carton which is suitable for display purposes and is provided with a three-heat control and a small thermostat which regulates the heat when the pad is turned on full-heat.

The Cutler-Hammer Manufacturing Company, of Milwaukee, has recently added, to its line of push-button specialties, the C-H 70-51 switch connector. The device combines in one thermoplastic housing universal clips for engagement with contact terminals of practically all irons and table appliances and the quick make-and-break switch mechanism of 660 watts similar to that used in the C-H 70-50 feed through switch. The casing is made in two halves, removal of one exposing the two terminal screws at the top of which the ends of the conductor are attached. A spring coil prevents kinking of cord and prevents wear. The design is such that complete engagement of the contact clip with the posts of the appliance is possible with no interference with the usual post guard.

The Edison Electric Appliance Company, Inc., of Chicago, has recently placed on the market the new Hotpoint Revere percolator urn. A special feature of this urn is the switch handle on the outside of the base of the appliance. The body of the urn is of copper heavily nickel plated.

The Minneapolis Heat Regulator Company, of Minneapolis, Minn., has recently placed on the market a new thermostatic relay switch designed for the thermostatic control of motors, electric heating units, and other electrical circuits. A new bulletin published by the company fully describes the switch and method of installation.



Perhaps because he is the largest (in two ways) manufacturer of electric signs in Los Angeles and maybe because he was chairman of the reception committee, Paul D. House, president of the Electric Products Company, was one of the most conspicuous men at the annual picnic of the Los Angeles contractor-dealers. The smiling young lady to the left of Paul, who is signaling the orchestra to start another dance, is Miss Isabelle Thompson, of the Los Angeles office of the Pacific States Electric Company. Rumor has it that Miss Thompson danced with every man at the picnic. Why weren't we there?

Trade Outlook

San Francisco

The expected seasonal decline in building has hit San Francisco and the San Francisco Bay region with less strength than in previous years and many construction projects are still under way, while others are just starting. Construction costs are rather high thus preventing any decline in rents.

Jobbing houses dealing in winter clothing, blankets, rubber goods, hardware and related articles report that demands are large and that business is good. This demand is attributed to previous tendencies to buy conservatively in these lines. Stocks of staple merchandise are rapidly decreasing and with prices rising, merchants supplied with large stocks are in a good position.

Grape growers in the state suffered the heaviest losses during the recent crop season, due to delays in shipping, because of refrigerator car shortage and a comparatively slow eastern market. Early November rains hindered the harvesting of the rice crop to some extent.

Bank clearings for San Francisco for the week ending Nov. 16, were \$160,400,000, an increase of \$20,700,000 over the total for the preceding week. Both weeks show an appreciable gain over the clearings in 1921, but are slightly under the same weeks in 1920.

Electrically equipped residences and apartment houses are becoming more prominent in the city and the San Francisco Bay region. A great number of the builders are eliminating furnaces and are installing electric heating units in the apartments, leaving the tenant to pay the heating charges.

Indications are that the Christmas trade will be brisk and that business will be conducted upon a more profitable basis than it was last year. Dealers in electrical appliances are endeavoring to increase their sales through newspaper advertising campaigns.

Los Angeles

For the first fifteen days of November, Los Angeles building permits kept close pace with the record for October in the number issued, but fell short in the valuation; however, the 2476 permits issued with a valuation of \$5,294,005.00 exceeded the same period of last year by approximately 23 per cent.

Bank clearings for the first fifteen days of November amounted to \$228,877,272.25 which compares with the same period of 1921, with \$182,784,798.12 as an increase of approximately 25 per cent.

The huge building program in Los Angeles continues to be one of the dominant factors in keeping up the sales of electrical supplies, however, this is true of other portions of Southern California as witnessed by the city of Long Beach breaking all previous building

records with a total in excess of \$12,000,000 for the 10 months of this year. The same condition exists in other cities and is keeping this section in the forefront of the nation's business.

The sale of electrical appliances both large and small, continues with increased results. This is partially due to the stimulus of fall and Christmas trade, but also to the increased use of electrical devices for the home. The huge advertising campaigns that are being conducted by some of the leading manufacturers and jobbers are rendering invaluable aid in increasing sales.

The conduit situation is improving though slowly and the demand, on account of increased building construction is ever on the up-grade. The sale of radio apparatus is improving and a large volume of business is expected during the coming month.

Portland

Generally speaking, business in Portland district continues good with nothing to fear for the future. The car shortage which has lasted for two months has been a big disturbing factor, with no immediate relief in sight. Coming as it did at a time when crop movements were heavy, the fruit growers, and particularly the apple men have suffered considerable loss. In the lumber industry a recent canvass showed that on an average, the 2 mills were getting only 30 per cent of their car requirements. As the production of lumber is still about normal the stocks are accumulating. From one-third to one-half of the lumber shipments from Portland are moving by water.

Retail business in Portland is at least normal with a strong demand for retail stores. Bank clearings for October showed a healthy increase over the same month of 1921. Postal savings are on the increase. An excellent holiday trade is expected. The power companies of Portland are still working large gangs in an endeavor to catch up with the new extensions. Ranges are moving well. Figures for daily generation of energy are continually breaking all former records with the usual time for the winter peak several weeks ahead.

Figures just issued by the shipping board give the port of Portland second place of all the Pacific Coast ports, when considering total cargo transactions both cleared and entered.

Salt Lake City

Approximately \$6,000,000 was distributed on Nov. 15 by sugar manufacturers among the beet growers of Utah and Idaho, representing, in most instances, the initial settlement on the 1922 sugar beet crop. This settlement covers October beet deliveries on the basis of a guaranteed minimum of \$5.00 a ton. Indications are that the farmers

will receive an additional \$2.00 per ton for their beets. Another settlement will be made Dec. 15, covering November deliveries; and still further adjustments will be made later to take care of the additional \$2.00 per ton.

The distribution of this sum in actual cash means much for the intermountain section at this particular time, and is immediately reflected in an easier financial situation.

Most merchants, both wholesale and retail, report an increased volume of business as compared with the same period a year ago.

Electrical jobbers also report business as improving. The sale of appliances is fairly satisfactory. Credit conditions and collections are continuing to show some improvement.

The mines are turning out large quantities of ore, with every indication that conditions in this industry will continue satisfactory.

Seattle

City building permits for the month of September totaled almost \$2,500,000 setting a record for one month in building construction. Incomplete returns from other Northwest centers indicate that the volume of building construction shows no signs of let-down as winter approaches.

Farmers have felt the car shortage acutely, apple shipments in particular being delayed. Favorable weather conditions for harvesting of crops is noted in all sections of the state, and the tonnage in most cases is greater than in 1921. Statements from the department of public works indicate that early relief may be expected in the car situation.

Lumber production is being maintained, and the demand continues good, with a steady market. Lack of cars is still seriously hampering the inland mills, but water shipments have absorbed the stocks of the coast mills. Over a billion more feet of lumber were shipped through the ports of the Pacific during the first nine months of 1922 than during the same period of 1921.

Denver

Several snow storms, including a near blizzard, have had a dampening effect on business, especially in the construction and agricultural lines, during the past fortnight. Although the moisture is of untold value to the farmers, there are a number who have suffered in delivering beets to the sugar factories and in getting farm products to the railroads. The latter, however, have been delayed materially but it is believed that transportation facilities will be back to normal in the course of a month or so.

Electrical jobbers report prospects for splendid Christmas business. Present stocks are moving but on unusually close margins, especially conduit, armored cable, and wiring devices. Considerable competition is still evident in small house wiring jobs. Several sharp reductions have been made by local lighting fixture dealers. Heating appliances are moving easier, also portable lamps.

Construction News

Bridges

Ariz., Prescott—County highway commission has advertised for bids for constructing a steel bridge across Agua Fria, to handle traffic over the Black Canyon Road. The bridge will be of the steel truss type, 231 ft., in two spans.

Calif., Santa Ana—County supervisors have adopted plans for a 524-ft. bridge across the Santa Ana River as part of the state highway link between Huntington Beach and Newport Beach. Estimated cost, \$50,000. Structure will consist of three 60-ft. spans, Warren steel trusses resting on concrete piers. At each end will be 31-ft. bents of concrete pile construction. The structure will be 24 ft. wide. J. L. McBride, county engineer.

Colo., Denver—A. K. Vickery, city engineer, has announced the authorization of \$40,000 to cover the construction of a new concrete bridge over Cherry Creek at Eleventh Avenue. Plans and estimates have been completed and bids will be opened early in December.

Ore., Portland—At the recent election two measures were passed upon for the bonding of the city in the amount of \$1,600,000 for the construction of the Ross Island bridge and \$3,000,000 for the construction of the Burnside bridge. A conference between members of the county commissioners and District Attorney Meyers has been held to determine just what steps are necessary for the construction of the two bridges.

Wash., Seattle—The city council has issued a call for bids for the superstructure of the West Spokane Street bridge, the bids to be opened Dec. 8. Sixteen firms have thus far signified their intention of bidding on the work, which includes the fabrication and erection of the superstructure, machinery, and electrical equipment for the bridge. The structure will comprise a double-leaf bascule span, approximately 288 ft., center to center of trunnions as per plans, two approach spans about 140 ft. long, and a steel girder span about 136 ft. long. The width of the bascule span will be 45 ft. center to center of trusses and of the side spans 52 ft., center to center of trusses, and of the girder span about 40 ft. Four plans for bids are outlined as follows: Plan No. 1—calls for the furnishing of materials and erection of bridge ready to operate, estimated cost \$440,000; plan No. 2—furnishing of all material delivered on the job, estimated cost \$270,000; plan No. 3—furnishing of electrical equipment only, estimated cost \$22,000; plan No. 4—work of erecting what is furnished under plans Nos. 2 and 3, at an estimated cost of \$144,000. The sub-structure contract is now being carried out by J. A. McEachern Company, at a cost of \$265,000. The bridge with approaches, viaducts, etc., when completed, will cost \$1,000,000.

Dams

Calif., San Diego—City council has appropriated funds for purchase of flush gates for Lower Otay and Barrett dams. Cost, \$16,526. H. N. Savage is engineer on the dams.

Calif., Los Angeles—Contracts for the gates at the San Dimas and Live Oaks dams, new flood-control projects, have been awarded by the Board of Supervisors to the Llewellyn Iron Works for \$17,000. The gates are to be built within 30 days. The gates at San Dimas are 4 by 6 ft. in size and are to be placed in 90 ft. of water. Those at Live Oaks are each 3 by 4 ft. and are to go in 60 ft. of water.

The San Dimas dam is virtually completed, at a cost of \$485,000. The Live Oaks dam will cost \$150,000.

D. C., Washington—A new contract between the government and the Canyon Power Company of Nevada, which, if agreed to by both parties, will result in early construction work on the proposed Springs Reservoir in the Newlands project, Nevada, has been submitted by the reclamation service for the approval of the secretary of the interior. The agreement provides for a ten-year renewal of the lease the power company has on Lahontan power plant, which is to expire Dec. 1, 1924.

Ore., Medford—A new reservoir is to be built to cost about \$35,000. The plans and specifications, on file in the office of the city recorder, call for a reservoir of cement with a capacity of 2,000,000 gallons. F. N. Cummings is the engineer in charge.

Wash., Tacoma—The City of Tacoma was recently granted permit to construct a dam on the north fork of the Skokomish River and divert the waters of the river for the generation of electric power, the permit being granted by Marvin Chase, supervisor of hydraulics, and represents a forward step in the city's development of the Lake Cushman project. The way is now open to proceed with the first engineering work on the dam and first unit installation, which will be at the dam, and the granting of the permit marks the end of a two-year fight by the city through the courts. The permits grant the right to construct a reservoir on the Lake Cushman site which will contain 190,000 acre-feet of water, giving a flow of up to 1,000 sec.-ft., and an estimated average flow capable of generating 64,545 continuous horsepower. Estimated cost of the reservoir is \$1,768,000.

Highways

Ariz., Phoenix—The proposition to increase the bonded indebtedness of Arizona for constructing approximately 95 miles of paved highway as a connecting link in the Phoenix-Los Angeles road, carried at the election Nov. 7.

Ariz., Prescott—County highway commission will call for bids at once for construction of northern end of the Prescott-Ash Fork Road. The work has been approved by the U. S. Bureau of Public Roads.

Ariz., Phoenix—Arizona state highway department has started the construction of about 30 miles of road from a point 4 miles north of Marinette to Wickenburg on the road north from Phoenix, through Prescott. Contract for this work was let by the Maricopa county highway commission to the state department at its bid of \$165,000, the amount set aside by the commission for the work. A large amount of rock excavation will be necessary on that part of the road from Marinette to Hot Springs Junction. It is stated that the U. S. Bureau of Public Roads has approved federal aid for this project to the amount of \$205,000, which will be available in addition to the \$160,000 appropriated by Maricopa county and the amount to be expended by the state on the 4-mile section at the Marinette end of the road.

Ariz., Phoenix—The proposition to bond the state for \$2,500,000 for the building of a paved highway from near Phoenix to the Colorado River opposite Blythe, failed at the recent election.

Ariz., Yuma—Until Dec. 4, bids will be received by Yuma county highway commission for paving the Yuma County highway system from Yuma south, with asphaltic concrete base and wearing surface. This will be a cash job and progress payments of 90 per cent on monthly estimates will be made. Contract will amount to approximately \$500,000. Plans and specifications may be obtained from Norman B. Conway, highway engineer, on payment of \$25.

Calif., Huntington Beach—Bids for constructing the coast boulevard between Huntington Beach and Newport, will be advertised for about the latter part of December, according to N. D. Derlington, state highway commissioner. J. L. McBride, county engineer, of Santa Ana, is now securing rights-of-way, which will be 100 ft. to provide for future widening. Orange County will build a concrete bridge across the Santa Ana as part of the route. The bids on the bridge will not be received until March.

Calif., Long Beach—The section of the Coast state highway between Long Beach and Huntington Beach, 7.7 miles, will cost approximately half a million dollars, including bridges. Los Angeles county will build a \$100,000 concrete bridge at Belmont Shore Place and a \$75,000 concrete bridge at Naples, while Orange County will build a pile bridge 700 ft. long at Anaheim landing. Grading and paving of the highway will cost approximately \$290,000. Construction of the bridge at Belmont Shore Place is under way and paving will be started very soon. W. M. Ledbetter & Co. of Los Angeles, are building the bridge and H. H. Peterson, of Loma Portal, has the paving contract.

Calif., Los Angeles—City engineer has been instructed by city council to start new proceedings for the improvement of the 5th St. district in San Pedro. The grading alone will amount to \$300,000, with a total of about \$1,000,000. Former bids were rejected and it is hoped to reduce the cost in new proceedings.

Calif., Los Angeles—County supervisors will improve main highways leading into Los Angeles. Estimated cost, \$150,000. They are Cahuenga Pass grade, \$100,000; Glendale Blvd., \$10,000; Palms and National Blvd., \$10,000; Western Ave., \$7,000; Indiana St., \$15,000; and Alhambra Ave., \$8,000. Agreement was reached between supervisors and board of public works.

Calif., Los Angeles—County road department will file plans with county supervisors in about two weeks to pave about 23 miles of road from Palmdale through Little Rock, R. D. I. No. 137, involving about 17 miles of 18-ft. wide asphalt concrete, 5 in. and 6 in. thick, 3 miles disintegrated granite pavement 18 ft. wide, 6 in. thick, and 3 miles graded roadway. Estimated cost, \$500,000. It will probably be two months before the hearing is held.

Calif., Santa Monica—Santa Monica's proposed bond issue of \$1,200,000 to open and widen streets failed by 105 votes. Most important of the projects included in the city's big street improvement program was the opening and widening of Trolley way, in continuation of the Coast state highway through Santa Monica and Venice. A mass meeting of citizens will be held soon to consider what may be done to carry out this project, which is regarded as vital to the future development of Santa Monica.

Calif., Sacramento—A call for bids on the following additional road building projects has been issued by the state highway commission. bids to be opened here on Dec. 11: Siskiyou County—Between Granada and Yreka, 8½ miles to be graded and paved with either Portland cement concrete, asphalt concrete or asphalt macadam. Siskiyou County—Between two miles south of Hornbrook and the Oregon state line, 9.8 miles to be graded. Placer County—Between Roseville and Lincoln, five miles to be surfaced with asphalt concrete. A day labor crew is at work at present on this stretch of

road laying concrete shoulders which will result in adding about five feet to the width of the highway. Glenn County—Between Willows and a point three miles south of Glenn, 11.9 miles to be graded and surfaced with gravel. This unit forms a section of the Willows-Oroville road, which has been the subject of a number of conferences before the highway commission. Sonoma County—Over Northwestern Pacific railroad near Lytton, construction of a bridge consisting of 32-ft. reinforced concrete girder spans. Santa Clara County—Between five miles east of Gilroy and San Felipe, four and one-half miles to be graded and surfaced with gravel. Fresno County—Between Parkfield Junction and Coalinga, 8.9 miles to be graded.

Calif., Sacramento—Six new units of road work, including the grading of almost twelve miles on the Tahoe-Ukiah road in Nevada County, are included in a call for bids just issued here by the state highway commission. The bids will be opened at the Sacramento office of the commission on Dec. 18, and it is probable that contracts, at least for part of the proposed work, will be awarded before the close of the year. The grading work in Nevada County will extent from Nevada City eastward to Little Deer Creek, constituting the first construction to be undertaken on the Tahoe-Ukiah road east of units in Sutter County. The stretch is through a mountainous country for the entire distance. The call also provides for the submission of proposals for widening and thickening the highway in Yuba County, between Morrison's crossing and a point one mile south of Marysville, a distance of approximately eight miles. Shoulders to be added to the present highway will increase its width of twenty feet, and the base of the whole paved with asphalt macadam. Other units covered in the call are as follows: Contra Costa County—Between Hercules and Rodeo, 1.8 miles to be graded and paved with Portland cement concrete. San Benito and Santa Clara Counties—Between Hollister and Pacheco Pass, 8.2 miles to be graded and paved with asphalt macadam. Madera County—Between the westerly county boundary and Califa, 14.2 miles, to be graded and paved with asphalt macadam. Ventura County—Between a point $3\frac{1}{4}$ miles southeasterly from Hueneme Road and Rindge Ranch, 7.4 miles, to be graded. On Dec. 11 the commission is scheduled to open bids on seven additional projects, most of which are located in Superior California.

Idaho—Pocatello—Contract for the section of the new state highway between Pocatello and Batise Springs has been awarded to the Deluvik-Orino Construction Co. of Spokane on a bid of \$26,815. The construction includes a bridge across the Portneuf River with a span of 90 ft. Work will start about April 1, 1923.

Ore., Portland—The state highway commission has awarded contracts for 27.47 miles of road work, amounting to \$400,608, and has under consideration 27.89 miles, amounting to \$217,982, pending adjustments. On the Ashland-Klamath Falls highway the commission had 34.29 miles up for bidding. The Hayden Creek-Keno section in Klamath County, consisting of 12.12 miles of grading, was awarded to John Hampshire for \$114,097, subject to the approval of the secretary of agriculture. Two other units of the same highway, 12.34 miles of surfacing in Jackson county and 9.82 miles of surfacing in Klamath, have been referred to the engineer pending adjustment of details. S. S. Shell is low bidder on the Jackson County end, his bid being \$79,210, and W. C. Stone was low man for the Klamath surfacing, his bid being \$65,110. The government wants the grade widened on the Jackson County part. Alsea mountain, the worst section of the Alsea road, between Corvallis and Waldport, is to be graded for a distance of six miles. The award was made to Joplin & Eldon for \$204,669. This section is located

in Benton County. Contract for the Dalles-California highway has been awarded to Moore & Anderson to grade 9.35 miles and surface 15.65 miles in Jefferson County from the Wasco county line to Madras.

Utah, Salt Lake City—The contract for the construction of a new highway through Sardine canyon, in Cache County, from the end of the present pavement at Wellsville to the Boxelder county line and for surfacing the new road, 6.962 miles long, with gravel, will probably go to O. Nelson, under bids which were opened by the state road commission at the state capitol. Mr. Nelson's bid, with costs of materials furnished by the state and a 10 per cent allowance for engineering, inspection and contingencies, totals \$114,613.38, according to present estimates of quantities. This is at the rate of \$16,462.71 per mile, which figures out about the most expensive of any gravel road as yet constructed in the state. The roadway is for practically the entire distance through a canyon and a very considerable amount of difficult construction is required.

Utah, Salt Lake City—Utah's share of the \$150,000 being raised for work on the Victory transcontinental highway will be spent on the completion of the Wendover cutoff running for 126 miles between Salt Lake City and the Utah-Nevada line.

Utah, Salt Lake City—Contract for federal aid project 41, the construction of a gravel-surfaced road from Morgan to Peterson, 7.798 miles long, in Morgan County, was recently awarded to the Western Engineering and Construction Company by the state road commission. This company submitted the lowest bid of nine received, totaling \$49,433.90. With cost of materials furnished by the state and 10 per cent additional for inspection, engineering and contingencies, the total cost is brought to \$61,130.30. Of this the county pays \$15,741.05 and the federal government the remainder.

Utah, Salt Lake City—Work on the contract for the Magna-Tooele county line paving project, which was awarded some time ago to the Moran Paving Company, will start at an early date. The pavement will cost about \$215,000, of which Salt Lake will pay 26 per cent and the federal government the balance. Preston G. Peterson is chairman of the state road commission.

Utah, Salt Lake City—Bids have been opened by the state road commission for the construction of $7\frac{1}{2}$ miles of gravel surfaced road from Heber City to Hailstone, on the Summit County line, serving the mining companies over the ridge from Pork City. Contract for the road work proper was awarded to the Gilkerson Construction Company. Christensen, Jacobs & Gardner have the contract for the erection of a "pony truss" steel bridge of 63-ft. span over the Provo River. The Gilkerson bid, including state's cost for materials and the inspection allowance, figures \$68,904.86. The bridge bid was \$11,985.16.

Wash., Everett—Norris Bros. of Burlington, on a bid of \$75,000, received the contract for $1\frac{1}{2}$ miles of grading, construction of a one-mile trestle and a boom guard.

Wash., Ephrata—Majotte & Winters, Spokane contractors, have been awarded contract by the Grant county commissioners for the construction of two miles of highway from Vantage Ferry south toward Beverly, on their bid of \$39,650.

Wash., Mount Vernon—Skagit County's road program for the coming year includes two important projects, on which bids will be called during the month of December. The first is the paving of the Edison-Bow road, a distance of three miles; the second is the paving of 2.4 miles of highway in L. I. D. No. 10. In both cases, 16-ft. concrete pavement will be laid. Frank Gilkey is county engineer.

Irrigation Projects

Calif., Merced—Plans calling for the expenditure of approximately \$150,000 for the sinking of thirty additional drainage wells and furnishing them with pumping and other equipment were approved by the board of directors of the Merced irrigation district. In approving the plans of Engineer Rex C. Starr for the drilling of 30 wells in addition to the five which are already in operation in the district north of Merced, the directors adopted a resolution requesting the state bonding commission to authorize the work. The pumps placed in the wells are capable of delivering 125 sec.-ft. of water.

Calif., San Diego—Santa Fe Land & Improvement Company (subsidiary of the A. T. & S. F. Railway), Ed. Fletcher and Margaret A. McClure have filed a petition with the State Department of Public Works to form an irrigation district including about 7,000 acres of the San Dieguito Ranch. It is proposed to furnish water for these lands from Lake Hodges Dam.

Calif., Oroville—The Oroville-Wyandotte Irrigation District unanimously authorized the issuance of \$2,000,000 in bonds at a recent election. The bonds will provide for construction of reservoirs, dams and similar work by the district and for the purchase of the South Feather Land & Water Co. and the Palermo Land & Water Co. rights and holdings. Construction of the first unit of the district will be advertised before the first of the year. The Lost Creek and Palerm reservoirs are planned to be completed by the next irrigation season. It is estimated that water will ultimately be provided for 50,000 acres.

Wash., Pomeroy—The Northwest Development Company of Spokane is promoting a project to irrigate 25,000 acres in Garfield and Columbia counties, at an estimated cost of \$75 per acre, making the entire project cost \$2,000,000. Two tunnels would be necessary, one of 750 ft. and the other 1,000 ft. through rock points, and in the mountain district the flume will be concreted. L. H. Lightner is manager of the development company.

Wash., Spokane—The Spokane Irrigation District, at a recent election, voted, 135 to 53, for a new cast iron domestic and irrigation water system, to be covered by a \$75,000 bond issue.

Wash., Yakima—The Rimrock irrigation project will provide work throughout the winter for about 300 men, according to F. T. Crowe, construction engineer. Cold weather will not interfere with the work of three steam shovels. About 140,000 cu. yd. of rock will have to be moved from the fact of the spillway. According to the present program, the reservoir will be filled and the storage made available for the irrigation season of 1925.

Power Plant Equipment

B. C., Vancouver—The British Columbia Electric Railway Company will build an automatic substation on Bodwell road, between Main and Fraser Streets, Vancouver, at a cost of \$65,000. It is to be a substantial brick structure, and work on it will be started at once. This is believed to be the first automatic electric substation to be erected in Canada.

Calif., Venice—Southern California Edison Company has secured a permit to erect a fire-proof structure on Virginia Ave. near Zena Place. The building will be equipped with a substation, being supplied from Culver City and Ocean Park. The building will cost \$13,500 and electrical equipment \$40,000.

Calif., Los Angeles—Washington officials are considering an application by Los Angeles to erect a power house on the aqueduct at a point known as Haiwee Narrows. The proposed power house will have a capacity of 6,400 hp.

Calif., Los Angeles—Indicating the rapid and intense development of the southwest portion of the downtown business district in Los Angeles, the municipal bureau of power and light, under direction of Chief Electrical Engineer E. F. Scattergood, is now completing the installation of new electrical facilities in that district costing approximately \$150,000. Increasing demands for electric energy in the area bounded by Sixth Street on the north, Figueroa Street on the West, Twelfth Street on the south, and Broadway on the east, has resulted in the extension into this district of several new electric cable lines by the city's power bureau. Already the laying of a \$75,000 electric conduit along Figueroa Street between Sixth and Eleventh Streets has been completed. The bureau is now engaged, it is stated, in the laying of a \$75,000 cable and transmission line along Eleventh Street between Figueroa and Hill Streets. Reliable electric service of the highest quality will be assured the downtown business district by the establishment of a new \$200,000 electric substation at 926 Francisco Street, it was stated by Mr. Scattergood. In laying out the new electric cable and transmission lines along Figueroa and Eleventh Streets the bureau of power and light is making advanced preparations for the serving of electric energy to the new Chamber of Commerce Building and the new Elks' clubhouse, in addition to meeting the rapidly increasing demands in that district on the part of new office buildings and commercial establishments, it was explained.

Power Projects

Calif., Watsonville—By a vote of 1,194 to 83 Watsonville authorized a bond issue of \$225,000 for the purchase of the plant and distributing system of the Watsonville Power Company. The bonds will run for 25 years and draw 4½ per cent interest.

Wash., Seattle—Contract for clearing right-of-way for transmission line, section No. 7, Skagit power project, has been let to S. A. Dahlberg, Seattle, on his bid of \$24,692.

Wash., Everett—The Delta Electric & Water Company is seeking permission from the city to install poles and string lines for the distribution of power in the city. The company, which is headed by Frank MacKean, is also seeking an agreement with the city whereby the city has the option, at any time, of taking over, by condemnation or other procedure, the distribution and equipment installed, buying power from the company and selling it to those under contract with the company. The option would run from Jan. 1, 1924, to Jan. 1, 1927, after which time it becomes void. The agreement and permit would also be void if the electric company fails to establish and operate in Everett by Jan. 1, 1924. The company, according to the president, is at present constructing a 12,000-hp. plant on Pilchuck Creek, which is expected to be ready for operation Nov. 1, 1923.

Railways

Ariz., Kingman—The Sharp-Fellowes Contracting Company, Central Bldg., Los Angeles, which has the contract for the Yampai-Griffith double tracking on the Santa Fe railroad, has received a second contract for an additional track between Griffith and Topock. This will bring the double track as far as the Colorado River and will give the company two sets of rails nearly all the way through Arizona. In the new work, which will cost about \$2,500,000, several curves will be eliminated, but in general the new line will follow the old grade. It is understood that the only remaining single track section, that between Bagdad and Daggett, will be double tracked within three years. A sub-contract for 25 miles has been let to James Martin of Kingman.

Calif., Metz—Utah Construction Company has been awarded contract by Southern Pacific Railway at \$200,000 to construct a reinforced concrete tunnel on the coast line near Metz, Monterey County. Work will involve 171,000 lb. reinforced steel, 4,340 cu. yd. concrete, 85 tons or 6,278 lin. ft. new 90-lb. rails, 1,700 redwood cross ties, 3,050 10-in. tie plates, and 2,000 cu. yd. ballast.

Calif., Glendora—Application has been made by the Pacific Electric Railway Company to the California Railroad Commission for permission to build a line through the Glendora foothill country to a connection with the company's San Bernardino line at Lone Hill. The line will be 5 miles long and will cost approximately \$400,000. It will make possible new passenger service via South Pasadena to San Dimas and San Bernardino. Plans for this project were made before the war, but were held up and it is the first important extension to be made by the company since the war.

Calif., Los Angeles—Double-tracking of a part of the Temple Street line west of Park View will shortly be begun. The new double track will be laid from Park View to Fountain and Virgil Avenues, where at present a single line operates. The only part of the route that will be left single track is from Fountain and Virgil Avenues to Fountain Avenue and Edgemont, and the existing track will undergo a reconstruction. This is the biggest track reconstruction job involving intricate special work undertaken by the Los Angeles Railway since the rerouting of lines in 1920. Work will be begun in the near future, and will be carried out at night with the aid of two derricks and a large force of men.

Calif., Calexico—Southern Pacific Railway plans a standard gage line from Mexicali to tidewater on the Gulf of California, 65 miles. The new line will tap the rich cotton lands in this district. Construction will start the coming winter, according to J. D. Isaacs, company engineer, at present in Calexico, making survey. The gulf terminus is Labomba.

Idaho, Boise—The city of Boise has accepted the offer of the Oregon Short Line to build a railroad track from Orchard to this city. The company will build a new passenger station as well as 27 miles of new trackage, with bridges and tunnel and will enlarge its freight terminal facilities in Boise and will spend approximately \$3,200,000 in and near Boise. The city will be required to raise approximately \$400,000 to cover its part of the agreement which provides that Boise purchase and deed to the Oregon Short Line the right-of-way for the railroad on the bench, estimated to cost \$75,000; that it deed to the Oregon Short Line the citizens' right-of-way and raise a trust fund of \$325,000, the interest from which may be used to pay taxes on the newly constructed line in the event they shall be in excess of \$10,000 per mile, this fund to be held in trust for a period of twenty-five years. Carl R. Gray is president of the railroad company.

Idaho, Pocatello—The Oregon Short Line will soon begin construction of a new freight depot and office building at Montpelier to take the place of the building destroyed by fire last spring. The contract for this building has been let to the Burke Engineering Company of Salt Lake City. The plans call for a structure 328 ft. long and about 35 ft. wide. Part of the building will be two stories high and will contain office rooms for the assistant superintendent, roadmaster, chief dispatcher and others.

N. M., Columbus—Colorado, Columbus and Mexican Railroad Company, a new corporation, has filed papers with interstate commerce commission, Washington, D. C., involving construction of a 550-mile railroad between Columbus and Farmington, New Mexico, with branch lines to El Paso, Texas and other points. Permission

is asked for a \$20,000,000 bond issue and a \$5,000,000 common stock issue.

Ore., Klamath Falls—Contract for construction of 12 miles of the Strahorn Railroad from the present terminus near Hildebrand to Sprague River, has been let to the Nettleton, Bruce, Echbach Co. of Seattle, at a contract price of approximately \$175,000. The railroad is to be completed to Sprague River in May, 1923.

Wash., Port Angeles—Announcement has been made that the Clallam Lumber Company and the Bloedel-Donovan Lumber Company are prepared to log their six billion feet of timber between Fairholme and Quillayute Prairie, and would have engineers in the field, beginning shortly. Work on construction of the railroad will commence in the spring of 1923 with a large crew of men placed for railroad construction, and another crew placed in the woods for logging work.

Wash., Tacoma—The Puget Sound Electric Railway has completed plans and will start work at once on the new interurban station to be erected at South Eighth and A Streets, to cost \$20,000, and to be of brick and stucco construction.

Wash., Hoquiam—The R. R. Smith Lumber Company has finished 2½ miles of grading and is ready to build a logging railroad. Plans are under way to build 225 bungalows and install a better electric light plant with an estimated cost of \$2,200,000.

Wash., Walla Walla—A 50-year franchise was recently granted to the Walla Walla Valley Railway to construct a line 3 1/3 miles long, branching from College Place to run through fruit and garden land south and west of the city. The O.-W. R. & N. Co. filed application for a franchise over the same ground. Hearing has been set for Dec. 22. Commissioners announced that this second franchise would be granted as the O.-W. R. & N. Co. and the electric road have come to an agreement. Work on the road will start immediately.

Street Lighting

Calif., San Bernardino—Thomas M. Holland was awarded contract for the construction of the ornamental lighting systems on E and F Sts., price, \$13,641.81, involving reinforced cement concrete posts, brass globe holders, 8 x 16-in. opalescent globes, Mazda lamps, sockets, wiring, etc.

Calif., Carpinteria—Chamber of Commerce has petitioned the Santa Barbara county supervisors for a lighting district, which will probably include a larger area than the town proper.

Calif., Santa Monica—Engineering department has completed plans and specifications for ornamental lighting system for Santa Monica Blvd. The system will comprise six lights to the block, the posts to be of Grecian type, 20 ft. overall, with two lamps of holophane glass, carrying 500-watt globes. An ordinance will be presented to the council at once.

Calif., Los Angeles—Bids are being received by board of public works for ornamental light posts complete on Central Ave., between 50th St. and Slauson Ave. Certified check or bond, 10 per cent.

Colo., Denver—The Mutual Oil Company, operating a refining plant and a number of automobile filling stations, is planning on the early installation of ornamental lighting standards at all its properties in the residence district, according to L. E. Thorpe, the local manager.

Wash., Aberdeen—The city's new boulevard lighting system is to be installed early next spring, according to the city's lighting committee, and bids for installing the system will be called in the near future.

Calif., Riverside—City council has adopted an ordinance of intention to construct electric lighting system of Cedar Street between First and Fourth Sts. C. R. Burns, city clerk.

Calif., Los Angeles—Bids are desired by the Briggs Company, 8225 Sunset Blvd., subdividers, for ornamental lighting system for new subdivision on Sunset Blvd. Bids are also desired by the same people on ornamental iron fencing.

Calif., Visalia—Chamber of Commerce plans movement for electroliners on 9 additional blocks in business section. The project will be presented to city trustees at once. A survey has been made by J. M. Dodds, engineer for the General Electric Company. Plans call for six standards to a block.

Streets and Sewers

Ariz., Holbrook—A. E. Thompson, Phoenix, Ariz., has been awarded contract at \$14,000 to construct city sewer system. Work will start at once.

Calif., Newport Beach—City trustees are planning a new sewer system and septic tank for Balboa Island. Paul E. Kressly, H. W. Hellman Building, Los Angeles, consulting engineer.

Calif., Turlock—The \$25,000 sewer bond issue carried at the election, Nov. 13. The issue includes \$20,000 for constructing 4-ft. concrete pipe line from present sewer disposal plant to Chatom drain, 3 miles west of present farm; and \$5,000 for extending main trunk sewer lines.

Calif., Coronado—City Manager Hyatt reports plans under way for paving of streets in that section of the city known as the flats, comprising parts of 5th and 6th Sts., Margarita Ave., Miguel and other avenues. Estimated cost, \$150,000.

Calif., Los Angeles—Los Angeles Board of Public Works expects to reduce the cost of the proposed Arroyo de la Sacatela storm drain in the northwestern part of the city by eliminating sections of the proposed system and starting new proceedings under the state improvement act of 1913, which would permit progress payments to be made on the work instead of requiring the contractor to finance it to completion. Revised plans are now being prepared by the city engineer. It is expected the original estimated cost of approximately \$3,000,000 will be reduced by \$1,250,000.

Calif., San Francisco—Bids for the construction of the north half of the Sloat Boulevard between Nineteenth and Thirty-fifth Avenues, estimated by City Engineer M. M. O'Shaughnessy to cost \$52,000, have been called for by the board of public works. The bids will be received December 6 by the board. Plans and specifications for the work were prepared by City Engineer O'Shaughnessy and transmitted to the board.

Calif., Chico—The city engineer has been ordered by the city trustees to draw up plans for twenty-two blocks of paving proposed to be constructed at an estimated cost of \$150,000.

Colo., Denver—The Frank B. Varnum Construction Co. has been awarded contract for putting in the footings of the new Sixteenth Street viaduct on a bid of \$58,401.50. Work of tearing down the old viaduct has already started.

Wash., Seattle—Romano & Company, on a bid of \$14,751, received the contract for installing water mains on East 45th Street, et al. The work involves approximately 2,500 ft. of cast iron pipe, 8 to 16 in. in size.

Wash., Tacoma—The city council has awarded to the American Cast Iron Pipe Company a contract for furnishing cast iron pipe to be used in construction of South J and K Streets trunk water main on their bid of \$46,119.15.

Wash., Seattle—Hauge & Espaland, here, on their bid of \$96,185, were low bidders for the paving and trestle work on Railroad Avenue. Four other bids were submitted, the highest being \$99,803.

Wash., Edmonds—City clerk George M. Leyda has issued an official call for bids for laying 14,956 sq. ft. of concrete sidewalks on Sixth Street, bids to be opened Dec. 5.

Wash., Seattle—The board of public works has awarded to Fiorito Bros. contract for the paving of Alki Avenue, on their bid of \$112,309. The work involves the laying of 35,800 sq. yd. of 7-in. concrete paving and installation of approximately 16,000 ft. of concrete curbs, in addition to 12,600 cu. yd. of grading. This is the second call for bids on this contract.

Wash., Seattle—Contract for paving of Taylor Avenue has been let to J. L. Smith, on his bid of \$32,769. This job involves the laying of 3,500 sq. yd. of 7-in. concrete paving and 2,600 ft. of concrete curbs.

Waterworks

Calif., Ventura—Plans and specifications for the reservoir site and pumping plant to be used by the new water company have been accepted by the board of supervisors and bids for same have been called for. Chas. W. Petit, county surveyor.

Calif., San Diego—Escondido Mutual Water Company and the San Diego County Water Company have executed a contract for water development and construction work in the lands surrounding Escondido. The plans contemplated by the agreement provide for an immense conduit, including tunnels, utilizing the present conduit of the Escondido Mutual Water Company on the San Luis Rey River, to the Bear Valley reservoir, about six miles east and north of Escondido, to have a capacity of 45,000,000 gal. of water per day. The Bear Valley reservoir is to be strengthened and its capacity enlarged. When the conduit is completed the San Diego County Water Company is to erect an electric power plant at or near the intake where there is a drop of several hundred feet.

Calif., Los Angeles—Two bond issues were sanctioned by the voters of Los Angeles city—\$5,000,000 for construction of new trunk lines and additional reservoirs for the city water system. There will be no increase in taxes on account of the water bonds as the board of public service has promised to pay the principal and interest out of the earnings of the department.

Calif., Watsonville—A bond issue of \$225,000 for the purchase of the plant and distributing system of the Watsonville Water Company was authorized by the voters at a recent election.

Wash., Bucoda—The city council has awarded to the American Wood & Pipe Company a contract for construction of the new water system for the town. The system will include two 60,000-gal. reservoirs, and will cost about \$25,000.

Miscellaneous

Calif., Long Beach—Wharf—Union Oil Company will start work at once on an 800-ft. wharf on the tide lands north of the drawbridge; site under lease. Estimated cost, \$200,000.

Calif., San Diego—Pier—Plans will be ready Dec. 15 for first section of the new mole-type pier, according to an announcement of Frank G. White, chief engineer of the port of San Francisco, who is under contract with the city of San Diego to do the preliminary engineering work. The first work will consist of dredging and bulkheads. Material for the fill will be taken from the channel cut, saving much haulage. Estimated cost of the project, \$1,000,000. As soon as the plans are ready, harbor commission will issue a call for bids.

Ore., Albany—Spruce Camp—Hoover & McNeil, local contractors, started on their contract to reconstruct the government spruce camp at Toledo, Ore., for the Pacific Spruce Company. The contract will involve 1,250,000 feet of lum-

ber; installation of modern machinery and placing of up-to-date equipment in every way.

Wash., Seattle—Conductors—Poles—The board of public works has approved plans and specifications submitted by Chief Engineer C. F. Uhden of the Skagit power project, providing for the furnishing and installing of electrical conductors for one transmission line project, also for furnishing 900 cedar poles for 15 miles of the first transmission line. The conductors are estimated to cost between \$250,000 and \$300,000 and the poles between \$10,000 and \$15,000. Bids for both of above will be opened by the board on Dec. 8.

Wash., Seattle—Wharf—Construction of a wharf, 450 x 250 ft., has been started by the Associated Oil Co. The structure is to be completed by Jan. 1. The plant, situated on a 7-acre tract fronting on the East Waterway, will consist of storage tanks, warehouse, garage, railroad spur tracks, office building and a 25-ft. cement retaining wall surrounding the tanks. Actual construction work is estimated to cost \$750,000. A. J. McNeil, local resident engineer, is in charge of the operations.

Buildings (Industrial)

Ariz., Tucson—Ice Plant—T. J. Boettcher was awarded contract for erection of a \$60,000 ice manufacturing and storage plant for the Arizona Ice & Cold Storage Company. Gay & Son were awarded the contract for the ice manufacturing machinery.

Calif., San Francisco—Factory—The Chamber of Commerce has announced that the Richard Hellman Manufacturing Food Products Co. of Long Island, N. Y., is making a \$250,000 investment in factory and land in this city. The site is at 16th and Harrison Sts. The plant will have five floors, reinforced concrete. The basement will have tankage for immense quantities of vegetable oils. The industrial architect, A. Torriggino, will have charge of construction.

Calif., Los Angeles—Storage—Construction of two additional storage buildings in the Torrance yards of the Pacific Electric Co. to house rails and track materials will begin at an early date. The buildings will each be 125 ft. long and 66 ft. wide, on platforms 200 x 77 ft. D. W. Pontius is general manager of the road.

Calif., San Francisco—Warehouse—The Talbot Investment Company will begin construction of a two-story and basement reinforced concrete building on the northeast corner of Eighth and Natoma Streets. It will be equipped as a heavy material warehouse together with showrooms and office rooms for the George H. Tay Co., wholesale plumbing supplies. J. E. Krafft & Sons, architects.

Calif., Isleton—Cannery—A 14-acre site has been purchased here by the J. C. Butts Co. of San Francisco, who plan to erect a large cannery. Contract has been let and plans call for completion of the work by Feb. 1, 1923.

Calif., Orange—California Cordage Company is taking bids for constructing a cotton spinning factory to be built at Orange. Plans by H. M. Bomar, Los Angeles, representing Gregg & Co., national textile engineers, call for concrete building, 97 x 137 ft., steel sash and cement floors.

Calif., Ontario—F. W. Edwards has the contract to erect a reinforced concrete factory building, 50 x 150 ft., at Main St. and Fern Ave., for Adams Record Cabinet Corp. The building will cost \$10,000 and the equipment, etc., will represent an investment of over \$40,000. L. R. Kennedy and E. S. Bidwell, local realty men, are interested in the work.

Calif., Los Angeles—Architect Chas. M. Hutchison, 427 Security Building, is completing plans for a 3-story brick factory building on Long Beach Ave. for Roberti Bros. Dimensions, 80 x 120 ft., mill construction, composition roofing, metal skylights, elevator, cement and wood floors.

Calif., Los Angeles—Architects John Parkinson and Donald B. Parkinson, 420 Title Insurance Building, have prepared preliminary plans for an addition to the Ford assembling plant at 2060 East 7th St. The building will be 1, 2 or 3-story, 150 x 350 ft., reinforced concrete frame and floors, brick filler walls, pressed brick and terra cotta facing, steel roof trusses, steel doors, steel sash, loading platforms, etc.

Calif., Bakersfield—C. A. Fellows, Central Building, has been awarded the contract for erecting an ice storage plant at Bakersfield for the Santa Fe Railway Company. It will be 82 x 340 ft., and 42 ft. high, inside dimensions; reinforced concrete construction, steel roof trusses, reinforced concrete and composition roofing, cork insulation, loading docks, conveyors, etc. Plans by engineering department of Santa Fe Railway Co.

Calif., Los Angeles—Sam Seelig Company, 1325 Palmetto St., has purchased a 5-acre site at northeast corner of Vernon Ave. and Alameda St. and will erect a central warehouse and manufacturing plant for its chain of stores. The main warehouse will be 4-story, 135 x 300 ft., class A reinforced concrete construction, steel sash, elevators, etc. Cost, \$450,000. There will also be a bakery building, garage and manufacturing building. Other warehouses will be erected on the property later. Total cost will be about \$750,000.

Calif., Glendale—Engineer Edw. T. Flaherty, 435 I. W. Hellman Building, has prepared plans for a 5-story class A furniture warehouse in Glendale, for Robinson Brothers Transfer & Fireproof Storage Company, 304 Brand Blvd., Glendale. Reinforced concrete construction, brick walls, 50 x 80 ft., concrete and maple floors, composition roofing, steel sash, wire and plate glass, elevators, wrought iron, storage rooms, metal doors, foundation for 8-story. Day work.

Calif., Wilmington—Architect Albert C. Martin, 430 Higgins Building, is preparing working drawings for a group of factory buildings at Wilmington for Pacific Coast Borax Company. Bids are being taken for reinforcing steel and plans will be ready for general bids about Jan. 1. The main building will be 2-story, 250 x 400 ft., designed for 5 stories. There will also be a power plant and several smaller buildings, 1 story each, and 900 ft. of wharfage, wooden pile construction. Main building will be reinforced concrete construction, flat slab system, composition roofing, metal skylights, wrought iron sash, steel rolling doors, fire doors, crushers, tanks, conveying machinery, 3 large elevators, etc. Cost, \$1,000,000.

Calif., Los Angeles—Architect Albert C. Martin, 430 Higgins Building, is taking bids for erecting two class A factory and warehouse buildings on E. 7th near Anderson St., for J. C. Hills, to be occupied by Peck & Hills Furniture Company. Bids will be taken separately on general contract, elevators, sprinkling system, plumbing and heating, wiring and painting. Buildings will be 3-story and basement designed for three additional stories, 80 x 100 ft. and 135 x 350 ft., respectively; reinforced concrete construction, flat slab system, steel sash, metal skylights, steel rolling doors, 3 freight and 1 passenger elevators, fire doors, sprinkling system.

Calif., Pomona—Hamm & Grant, Inc., 607 Ferguson Building, Los Angeles, have prepared plans and will erect the first unit of a factory building at Pomona for Teetor Adding Machine Company, 502 Pacific Finance Building, Los Angeles. Work will be started in a few days. Building will be brick and steel with saw tooth roof construction, 100 x 300 ft., with a 2-story reinforced concrete office building, 35 x 100 ft., in a wing at the center.

Calif., Pasadena—K. V. Packing Company has broken ground for a meat packing plant at

Lamanda Park, near Pasadena. W. S. Kelly has incorporated a company for \$10,000. Ground has been broken.

Calif., Fresno—Fresno Paper Company will build a box-board factory and mill. Its capacity will be 40 tons daily.

Calif., Wilmington—Wm. A. Heitman Construction Company, 900 Merritt Building, has the contract on a percentage basis for the erection of an oil refinery near Wilmington, to cost \$6,500,000, for the Shell Oil Company; the site covers about 1 sq. mile and the work will consist of power plant, pumping stations, tank farms, offices, garages, employees' quarters, store buildings, and road work. Work will start immediately. The general contractor desires bids on all sub-contracts.

Calif., Fresno—United Engine Machine Company has been incorporated with a capital of \$250,000 and will build four buildings, including machine shop 150 x 100 ft., foundry and molding shop, 150 x 100 ft., pattern shop, 75 x 50 ft., and a forge shop, 75 x 50 ft. G. J. Dolan, Jr., and D. Sulprizio, owners.

Calif., Calexico—Gay Engineering Corporation has broken ground for an addition to the Imperial Ice & Development Company's plant, at Calexico. The addition will add 11,000 tons capacity to the plant.

Calif., Anaheim—Charles A. Criss, cement contractor, has secured a permit to build a cement manufacturing plant at 315 So. Vine St. Three buildings including an office, cement house, and a molding and curing shed, will be erected at once. Mr. Criss will manufacture cement brick and art concrete work.

Calif., San Bernardino—F. M. Cummings, 430 Chapman Bldg., has prepared preliminary plans for a class A warehouse building at Rialto and D Sts., San Bernardino, for Southern Terminal Warehouse & Storage Company, 804 Wright-Candler Bldg. Brick walls, concrete construction; \$85,000.

Calif., Alhambra—Southern California Edison Company is having plans prepared by its engineering department for a group of warehouses and shop buildings to be erected at Alhambra. The buildings will include a main warehouse, 200 x 600 ft., warehouse, 100 x 400 ft., two warehouses 100 x 100 ft., and a shop building, 170 x 270 ft. Steel frame construction, steel roof trusses, steel sash, composition roofing, cement floors; \$750,000.

Calif., Los Angeles—Union Pacific Railway Company is having plans prepared by its engineering department at Omaha for the shop buildings to be erected near Belvedere Gardens. Buildings will include a 50-stall roundhouse and a number of large shops of brick construction. Plans will be ready for figures early next year, bids to be taken through the local engineering department. Plans are being prepared by local engineering office for subdividing a portion of the industrial tract, the work to include about 1 3/4 miles of concrete and asphalt paving, 4,000 ft. of sewer, railway tracks, etc. Development of the machine shop tract will require about \$100,000 worth of grading and installation of 30 miles of railway track.

Calif., Los Angeles—The Moran Company, 206 Kerckhoff Building, is preparing plans for a 1-story steel frame building at Washington and Stanford Sts. for W. Elmo Reeves. Brick walls, 100 x 145 ft., comp. roof, steel sash, metal skylights, concrete floor, wire glass, steam heating system, concrete foundation; \$40,000.

Calif., Santa Paula—Architects Allison & Allison, 1405 Hibernian Bldg., are completing plans for a packing house to be erected at Santa Paula for Santa Paula Citrus Fruit Association, as an extension to its present building. It will be 1-story and basement, 150 x 350 ft., cement basement and foundation, hollow tile walls, reinforced concrete columns and beams, comp. sawtooth roof, wood floors; \$200,000.

Calif., Visalia—California Packing Corp. will start work soon rebuilding plant No. 17, destroyed by fire a few months ago. Statements by officials indicate nearly one-half million dollars will be expended on the new buildings.

Calif., Los Angeles—Lepper & Laisy, 501 O. T. Johnson Building, have been awarded general contract at \$44,600 for erecting a 2-story class C warehouse and factory building on Ave. 22 near Humboldt St. for W. P. Fuller & Co. Contract for elevator was let to Baker Iron Works and sprinkling system to Western Automatic Sprinkler Co. at \$6,580. Hudson & Munsell, Douglas Building, architects. The building will be 120 x 125 ft., brick construction, pressed brick, plate glass, steel beams, comp. roofing, metal skylights, steel sash, cement and wood floors.

Calif., Los Angeles—Architects and Engineers Truesdell, Purinton & Newton, 304 San Fernando Building, are preparing plans for a 2 and part 3-story and basement reinforced concrete class A milk bottling and ice plant, near Jefferson and Hill Sts., for the Consumers Milk Company. Estimated cost, \$200,000.

Calif., Torrance—Houghton & Anderson, 143 Rose St., have the contract for two concrete foundations and floors, 77 x 200 ft., for warehouses to be erected at Torrance for Pacific Electric Railway Company. Superstructures will be 60 x 125 ft., constructed of frame and corrugated iron and will be erected by Wurster Construction Company. Plans by Pacific Electric engineering department.

Calif., San Francisco—Barrett & Hilp, 918 Harrison St., have been awarded a contract for the construction of a two-story reinforced concrete addition to the factory of the National Ice Cream Company on Guerrero St. Contract price, \$50,000. Plans were prepared by Architect W. Mooser, Nevada Bank Bldg.

Calif., San Francisco—Barrett & Hilp, 918 Harrison St., have been awarded a contract for the construction of a 3-story reinforced concrete factory and warehouse building, for the Simmons Company. It is to be erected on the northwest corner of Bay and Powell Sts. and will cost \$250,000.

Colo., Denver—A \$750,000 packing plant will be erected here shortly by the Blayney-Murphy Company, formerly known as the Coffin Packing & Provision Co. Plans have been completed, according to W. N. W. Blayney, president of the company, and with the necessary financing having been done, construction will start before the first of the year.

Colo., Denver—A new paint and varnish factory to cost \$60,000 will be built at Twenty-sixth and Blake Streets by the McMurtry Mfg. Co.

Colo., Denver—Two ice storage buildings, at a cost of \$100,000 when completed, are planned by the Denver Ice and Cold Storage Co., according to the plant manager, M. Charles Salet.

Colo., Denver—Construction has started on the freight depots of the Union Pacific system, which will be of brick, concrete and steel, 60 ft. wide and 850 ft. long. The office portion of the structure will be two stories high and the rest one story. The entire building is to be completed by Jan. 1 and will cost approximately \$300,000. P. J. Sullivan is general contractor.

Wash., Seattle—The Seattle Box Company will immediately erect a 3-story factory building and dry kiln. The structure will be 65 x 100 ft. in size, of heavy timber construction, and will form the third large addition to the company's plant.

Wash., Seattle—The Associated Oil Company has awarded to the Stewart Construction Company a contract for the building of the concrete retaining wall and the pipe conduits planned by the oil company, the work to cost \$40,000. The wall will contain 2,500 cu. yd. of concrete and will be 33 ft. high.

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THE Old Year fades into history as the New Year dawns. It is a time when we mingle thoughts of thankfulness with those of expectancy.

We choose this as one opportunity to express our appreciation for the courtesies extended us throughout the past year—which we trust has resulted in genuine satisfaction to all.

We would bespeak a continuation of our pleasant associations for 1923 with the assurance that nowise will our service be found wanting.



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George C. Tenney

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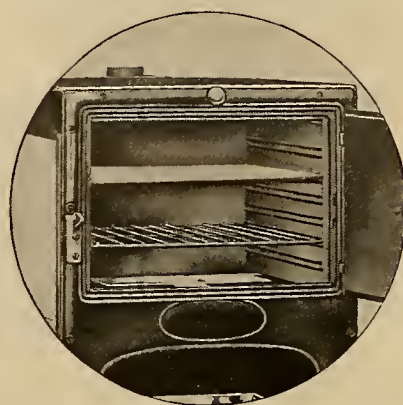
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1. The Crawford Oven has a larger baking capacity than any other electric range oven of its type.
2. Crawford heat is scientifically circulated, and applied evenly to every area of the food: this prevents "spotty" cooking, burned surfaces and under-done interiors.
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4. The same heating unit that does the baking also does the broiling on the Crawford Adjustable Broiler—an innovation in the economy of electricity.
5. The Crawford oven has a lower connected load than any other oven of equivalent cooking capacity.
6. A cake or pie may be withdrawn from the oven for inspection during cooking without lifting. The racks glide on smooth rack guides.
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9. The use of this accelerator shelf in the longer operations, gives a high temperature oven in the space below the shelf, and a low temperature oven above the shelf, without using additional current. Two dishes, requiring different temperatures, may be prepared in the separate spaces at the same time; it is ideal for roasting meat below, and preparing vegetables above, for the same meal, with the same clean heat.
10. Broiling on the Crawford Adjustable Broiler, and making the heat work double by baking in the oven at the same time, gives great economy, with absolutely no exchange of cooking flavors.



LESS than a year ago there were no Crawford Electric Ranges on the Coast. Today there are hundreds, each proving in actual use how the "Crawford made electric cooking perfect." One reason, among others, is that the rather startling claims made for the Crawford Oven are borne out by practical use. Central stations who are also merchants are realizing that the Crawford Electric Range *sells and proves.*

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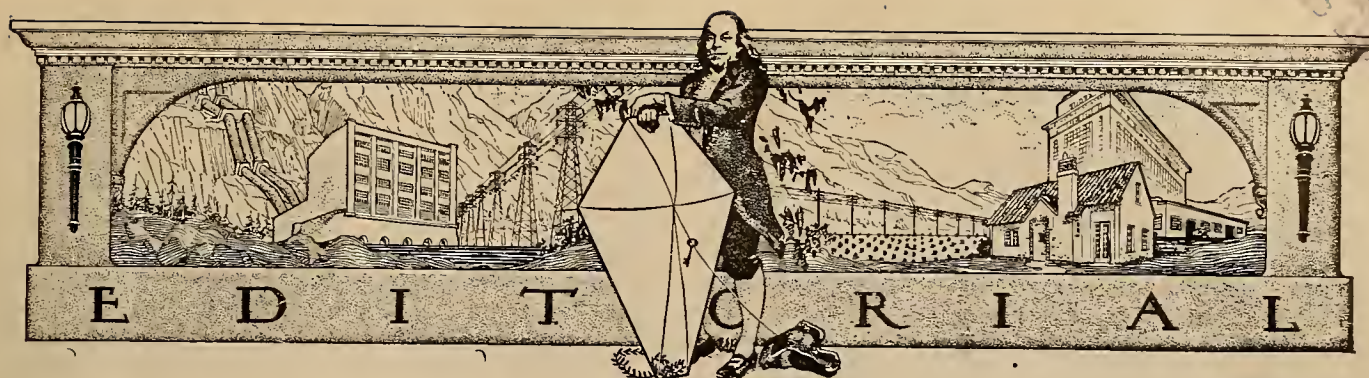
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In Times of Peace Prepare for War

RELIEF, rather than exultation, was the feeling inspired by the defeat of the Water and Power Act in California. At first thought, it would appear that the verdict of the electorate was conclusive, since the measure was defeated by nearly two and a half to one, and that the incident was closed.

THERE are indications that the incident is anything but closed, as is shown by the formation of a permanent organization at Sacramento, California, a few weeks ago, for the purpose of continuing the fight. The thinking people of the West must not permit themselves to be lulled into a false sense of security. For a new Water and Power Act, perhaps more skilfully prepared than its predecessor, with many of its more vicious features either eliminated or camouflaged, may be expected to put in an appearance in time for the next general election two years hence, in other states as well as California.

LORD NORTHCLIFFE strove to impress upon his associates an appreciation of the power of repetition. He demonstrated that to drive a point home in the mind of the average citizen, it must be repeated again and again. Publicity is the most effective weapon for combating the Russianization of the hydroelectric power industry. Frank, honest, truthful presentation of the facts

will clear the clouds from the minds of such people as the two hundred thousand voters who mistakenly recorded their belief in the Water and Power Act.

GRIEVANCES held against the power companies by individual consumers must be explained and corrected. Either rates should be simplified or the basis for the determination of rates should be expounded by word of mouth and in the public prints in plain, simple language understandable by the layman. Little things, if permitted to lapse, often exert an entirely disproportionate influence upon the affairs of man. A pig once started a war; a cow set fire to a great city. The plan of extending the privilege of part ownership among consumers should be pushed even more vigorously than it has in the past.

SOME of the western power companies have not even established departments of public relations, while others do not give this part of their work the attention it deserves. It is not sufficient that the present-day slogan, 'The Public be Pleased,' has become second nature with all of the higher officials of the power companies; the general public must be equally cognizant of this fact, and there is no better way of bringing this about than by practical demonstration.

The Spread of the Electrical Home Idea Is Evidence of Its Value

TWELVE Electrical Homes have been built and exhibited in the West in the past year. One hundred and sixteen thousand people visited the seven homes which are described in this issue, located in Seattle, Oakland, Alhambra, Stockton, Calexico, and Vancouver, B. C. It is estimated that another hundred thousand visited the five other homes at Denver, Salt Lake City, Boulder, Spokane and Tacoma, erected during the year and which have been previously described and illustrated.

The spread of the Electrical Home idea is evidence that no other form of advertising produces results comparable with those accruing from the staging of a successful exhibition of this kind. The exhibitions have been uniformly successful and the electrical interests cooperating to place these educational exhibits before the public have been well repaid.

The public is becoming sold on the advisability of having its homes adequately wired to make full use of electrical servants and of the benefits of correct illumination. Architects, builders and real estate men are capitalizing on the advantages of completely wiring homes and apartments, in fact, several builders are erecting nothing but "electrical homes." The public is interested in electrical comfort and electrical convenience bringers and has evidenced this interest by the increased purchases of domestic appliances in every city in which a home has been displayed.

Of the various methods of promoting practical cooperation, not only between the branches of the electrical industry, but between the electrical industry and its valuable ally "the public," the Electrical Home stands supreme. It produces results.

The Fable of the Hardy Pioneers and the Cautious Wise Men

THERE was once a mythical country, possessing wonderful undeveloped natural resources. It had large forests of timber, countless acres of fertile land, coal, oil and other minerals in abundance. It had a profusion of game, its streams and lakes abounded with fish and its climate was mild and temperate. But this magnificent mythical country was inhabited by a tribe of warlike savages. It was surrounded by stretches of barren desert, of forbidding mountains which defied all but the most daring and resourceful.

As time passed a hardy group of pioneers crossed the forbidding mountains, endured the hardships of the desert wastes, and subdued the savage tribes, building their homes in the mythical country. They were followed by other pioneers who built railroads and made the country easy of access. Soon there came great crowds of cautious people, cautious in that they avoided the dangers and hardships, but wise people, wise because they knew a good thing when they saw it. They promptly occupied the fertile acres, utilized the forests and minerals, pushing the pioneers unceremoniously aside. The pioneers

were skilled and accomplished in their way, but they were careless and did not adapt themselves to the changed conditions.

Pioneering days are largely over in the electrical industry. The pioneer electrical dealers are still in possession of the field.

But the day will soon be here when most electric appliances, like the electric iron, will no longer be classified as "specialties" but will be listed as "staple commodities." When that day arrives these commodities must be made available to the purchasing public in channels of distribution which will be readily accessible.

The electrical industry has borne and will bear the brunt of pioneering in the popularizing of domestic appliances. The electrical dealer will temporarily set the pace. But once the pioneering days are definitely over and it seems safe for the cautious and canny merchant, who has previously avoided contact with electrical lines, to aggressively enter the field, the electrical pioneer, unless he can adopt the intensive merchandising tactics of his competitors, will follow the pioneers of the mythical country.

Few Industries Operate On as Narrow Margin as Do Utilities

ONE of the large transportation companies carrying interurban traffic across San Francisco Bay, made last year a net profit of one-half mill per passenger out of the eighteen-cent fare charged. In other words, after paying operating expenses, including wages, depreciation and bond interest, the company had to haul twenty people in order to make one cent which might be applied toward dividends. On the package of gum which it sells from the news stands of its ferry boats, it secures as much profit as it does from transporting fifty people from 4 to 10 miles by rail and water.

Few industries operate on as narrow a margin of profit as do public utilities. Few industries pay as great a percentage of their gross earnings for labor and taxes, as do public utilities. Few industries in order to secure business, do the pioneering work which falls to the lot of the public utilities. No industry requires more efficient management in order to earn dividends than do public utilities, whose earnings are limited by law and whose success or failure rests on the shoulders of the management.

Signing of Compact First Step in Development of Colorado River

UNDER a provision of the Constitution, almost obsolete, which provides that states may make treaties among themselves, the seven states in the Colorado River basin, through representatives appointed by the various governors, signed a compact which should insure amicable development of our greatest natural resource. This treaty must be ratified by the several legislatures of the states involved and by Congress, then it becomes the law of the land.

In the treaty an equitable division and apportionment of the use of the waters is made. The river is divided into two basins, separated by the Grand

Canyon, and in the treaty proper recognition is given to the widely divergent needs of the two areas, with their attendant problems, rights and prospects. Agriculture takes precedence over power and industrial development in the treaty as signed, but there is plenty of water available in the great river to supply the needs of both agriculture and industry, and the development of one cannot but supplement the other. With the erection of a dam at Boulder Canyon, that is immediately and urgently needed, the danger of floods will be obviated and a remarkable power site will be added to the resources of the West.

The expeditious agricultural and industrial development of the two Colorado River basins, the storage of waters, and the protection of life and property from floods, will increase the productive area of the nation by four million acres, and will permit the development of four million horsepower in energy. The Colorado is the greatest undeveloped natural resource of the nation. With power, and with the assurance of a plentiful supply of food products raised by the people of the reclaimed land, who would furnish the outlet for the manufactured products of industry, the prosperity of the Southwest seems assured.

Let there be no delay in the ratification of the treaty.

Encouragement and Assistance Needed in Water Power Development

A REVIEW of the work of the Federal Power Commission during the two years of its operation clearly indicates the practical value of the Federal Water Power Act and the task now confronting the commission. Due to the many years' delay in securing adequate Federal legislation, it was but natural that a flood of applications should have followed immediately upon approval of the Act. Nevertheless, during its second year there have been filed with the commission applications aggregating a net total of 5,000,000 hp. of proposed installation. This amount, added to the applications of the preceding fiscal year, makes a grand total of 321, involving in excess of 20,000,000 hp. This amount is more than twice the existing water power installation of the United States, and more than six times the aggregate of all applications for power sites under Federal control in the preceding 20 years.

The chief purpose in the creation of the commission was to secure a common policy and a single executive agency in water power administration. Due to the situation in which the commission has been placed, this purpose has not been accomplished. Other agencies have been required to continue their independent activities, and these activities are not controlled by a common plan and are not subject to a common direction. This defect will not be cured, the policy of Congress cannot be fully executed, and the commission will not be able to perform in full the duties plainly intended by the Act until it is given authority to employ an adequate personnel of its own for its Washington office, and until it is given the administrative authority over all Federal

water power grants, whether issued under the existing or under prior laws. It is important that amendment of the Act in these respects be no longer delayed. Having waited ten long years for a legislative pronouncement of a government policy respecting the utilization of our water power resources, we should not be required to wait another long period of years before means are provided for the execution of that policy.

There is more water power development under way at the present time than at any previous period in our history. The greater part of it is being developed under the provisions of the Federal Water Power Act. There is much more waiting to be used. To increase the supply of electric energy and reduce its cost, we must utilize our water powers to the fullest practicable extent. Eighty-five per cent of our potential water powers are under Federal control. We have a law which, though by no means perfect, does provide reasonably satisfactory conditions and under which large scale development is proceeding. Instead of being obliged to drift along the obstacles should be cleared away, and there should be substituted a positive attitude of encouragement and assistance in water power development.

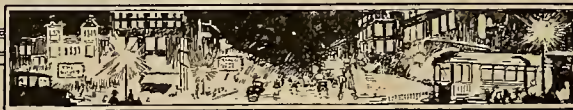
Need of Accurate Knowledge on Financing Rural Lines

THE question of the method of financing extensions into rural districts is engaging the attention of central station men since the use of electricity on the farm has become more general, particularly during the past year as better economic conditions have permitted the farmer to seek electric service. The adoption of a comprehensive policy which will correct the mistakes of the past and lay a firm foundation for future guidance is needed. The National Electric Light Association has published an excellent report on the subject through its Rural Lines Committee. Local divisions, notably the Northwest Electric Light and Power Association, have studied this problem and published reports.

Local conditions, established practices and accounting methods vary widely and it is doubtful if a general policy could be formulated which would fit individual districts. Provision should be made in each locality where the problem of financing rural lines is a pressing one, to have studies undertaken covering an extended period, that the cost of operation and maintenance can definitely be determined. Large distribution losses, low load factor and low power factor are characteristic of rural installations. Maintenance of lines, meters and transformers, as well as their inspection, resetting or testing, in addition to trouble service, involve special problems as compared with city distribution lines.

The problem is now largely a central station one but the discussion will extend to farm organizations and the rural press. It will be far better to solve the problem by cooperative action wherein facts may be weighed with reference to sound economics than to have the matter threshed out in the political arena.

CURRENT COMMENT



Casting aside jealousies which have delayed the development of the Colorado River for many years and exercising a right under the constitution of the

Colorado River Compact Means Much to West

United States which has been almost totally unused for nearly 140 years, representatives of the seven states comprising the Colorado River basin together with

Herbert C. Hoover, Secretary of Commerce and representative of the national government, have drawn up "The Treaty of Bishops Lodge," a compact which promises to settle for all time the controversies which have existed over the distribution of the waters of the main artery of the Southwest.

The Colorado River Commission, after twelve months' serious consideration of the complex problems, rights and prospects of the areas affected, and a series of 27 consecutive meetings at Santa Fe, N. M., on Nov. 24 signed an agreement which divides the waters of the river and stipulates that agriculture shall take precedence over power generation and industry in the use of water. When ratified by the legislatures of the seven states and by Congress, the agreement will become a part of the law of the land.

Secretary of Commerce Hoover, in a statement issued immediately following the signing of the agreement, outlined the significance of the document when he said:

"The big thing about the Colorado River compact is that it breaks the blockade on development of the whole river; it allows us all to go ahead with river development and with flood protection for the Imperial Valley.

"The worst thing about the compact is that it will destroy much oratory; it makes for spinach, and not for speech.

"One can get great emotion over conflict and quarrel. But there is no great oratory about the facts that the northern basin is separated from the southern basin by 1,000 miles of barren canyon; that the agricultural and economic life of the two basins are wholly different and that the logical thing to do is to divide the waters between them so they can make homes instead of defending injunctions. Nor can one make great oratory out of the fact that there is ample water and to spare, after the apportionment of enough water to each basin in perpetuity, to cover all of the present users, plus all of the known feasible projects, plus 30 per cent for good measure, then holding in reserve 30 per cent for forty years to see where it is most needed.

"There is nothing sensational about a compact that leaves all question of Mexican right to water to the state department, which is the only organ of the American people which has any right to deal with this question.

"There is nothing especially romantic about the provisions in the compact for the complete priority of agriculture over power, in the use of the water of this river.

"Yet behind all the praise and commonplace language of this compact lies the greatness and romance of the West, the building of a million more homes out under the blue sky in security and good will."

The compact as finally signed by the various state representatives follows:

Article I. The major purposes of this compact are to provide for equitable division and apportionment of the use of the waters of the Colorado River system, to establish the relative importance of different beneficial uses of water, to promote interstate comity, to remove causes of present and future controversies, and to secure the expeditious agricultural and industrial development of the Colorado River Basin, the storage of its waters, and the protection of life and property from floods. To these ends the Colorado River Basin is divided into two basins, and an apportionment of the use of part of the water of the Colorado River system is made to each of them with the provision that further equitable apportionments may be made.

Article II. As used in this compact: (A) The term "Colorado River System" means that portion of the Colorado River and its tributaries within the United States of America. (B) The term "Colorado River Basin" means all of the drainage area of the Colorado River System and all other territory within the United States of America to which the waters of the Colorado River System shall be beneficially applied. (C) The term "States of the Upper Division" means the States of Colorado, New Mexico, Utah, and Wyoming. (D) The term "States of the Lower Division" means the States of Arizona, California, and Nevada. (E) The term "Lee Ferry" means a point in the main stream of the Colorado River 1 mile below the mouth of the Paris River. (F) The term "Upper Basin" means those parts of the States of Arizona, Colorado, New Mexico, Utah, and Wyoming within and from which waters naturally drain into the Colorado River System above Lee Ferry at and also all parts of said States located without the drainage area of the Colorado River System which are now or shall hereafter be beneficially served by waters diverted from the system above Lee Ferry. (G) The term "Lower Basin" means those parts of the States of Arizona, California, Nevada, New Mexico, and Utah within and from which waters naturally drain into the Colorado River system below Lee Ferry, and also all parts of said States located without the drainage area of the Colorado River system, which are now or shall hereafter be beneficially served by waters diverted from the system below Lee Ferry. (H) The term "Domestic Use" shall include the use of water for household, stock, municipal, mining, milling, industrial, and other like purposes, but shall exclude the generation of electrical power.

Article III. (A) There is hereby apportioned from the Colorado River system in perpetuity to the upper basin and

to the lower basin, respectively, to exclusive beneficial consumptive use of 7,700,000 acre-ft. of water per annum, which shall include all water necessary for the supply for any rights which may now exist. (B) In addition to the apportionment in paragraph (A) the lower basin is hereby given the right to increase its beneficial consumptive use of such waters by 1,000,000 acre-ft. per annum. (C) If, as a matter of international comity, the United States of America shall hereafter recognize in the United States or Mexico any right to use of any waters of the Colorado River system, such waters shall be supplied first from the waters which are surplus over and above the aggregate of the quantities specified in paragraphs (A) and (B), and if such surplus shall prove insufficient for this purpose, then the burden of such deficiency shall be equally borne by the upper basin and the lower basin, and whenever necessary the States of the upper division shall deliver at Lee Ferry water to supply one-half of the deficiency so recognized in addition to that provided in paragraph (D). (D) The States of the upper division will not cause the flow of the river at Lee Ferry to be depleted below an aggregate of 75,000,000 acre-ft. for any period of 10 consecutive years reckoned in continuing progressive series beginning with the first day of October next succeeding the ratification of this compact. (E) The States of the upper division shall not withhold water, and the States of the lower division shall not require the delivery of water which can not reasonably be applied to domestic and agricultural uses. (F) Further equitable apportionment of the beneficial uses of the waters of the Colorado River System unapportioned by paragraphs (A), (B), and (C) may be made in the manner provided in paragraph (G) at any time after October 1, 1963, if and when either basin shall have reached its total beneficial consumptive use as set out in paragraphs (A) and (B). (G) In the event of a desire for a further apportionment as provided in paragraph (F) any two signatory States, acting through their governors, may give joint notice of such desire to the governors of the other signatory States and to the President of the United States of America, and it shall be the duty of the governors of the signatory States and of the President of the United States of America forthwith to appoint Representatives, whose duty it shall be to divide and apportion equitably between the upper basin and lower basin the beneficial use of the unapportioned water of the Colorado River System as mentioned in paragraph (F) subject to the legislative ratification of the signatory States and the Congress of the United States of America.

Article IV. (A) Inasmuch as the Colorado River has ceased to be navigable for commerce and reservation of its waters for navigation would seriously limit the developments of its basin the use of its waters for purposes of navigation shall be subservient to the uses of such waters for domestic, agricultural, and power purposes. If the Congress shall not consent to this paragraph, the other provisions of this compact shall nevertheless remain binding. (B) Subject to the provisions of this contract, water of the Colorado River system may be impounded and used for the generation of electrical power but such impounding and use shall be subservient to the use and consumption of such water for agricultural and domestic purposes and shall not interfere with or prevent use for such dominant purposes. (C) The provisions of this article shall not apply to or interfere with the regulation and control by any state within its boundaries of the appropriation use and distribution of water.

Article V. The chief official of each signatory State charged with the administration of water rights, together with the director of the United States Reclamation Service and the director of the United States Geological Survey shall cooperate, ex officio: (A) To promote the systematic determination and co-ordination of the facts as to flow, appropriation, consumption, and use of water in the Colorado River Basin, and the interchange of available information in such matters. (B) To secure the ascertainment and publication of the annual flow of the Colorado River at Lee Ferry. (C) To perform such other duties as may be assigned by mutual consent of the signatories from time to time.

Article VI. Should any claim arise between any two or more of the signatory States: (A) With respect to the waters of the Colorado River system not covered by the terms of this compact. (B) Over the meaning or performance of any of the terms of this compact. (C) As to the allocation of the burdens incident to the performance of any article of this compact or delivery of waters as herein provided. (D) As to the construction or operation of works within the Colorado

River Basin to be situated in two or more States, or to be constructed in one State for the benefit of another State, or (E) As to the diversion of water in one State for the benefit of another State: The governors of the States affected, upon the request of one of them, shall forthwith appoint commissioners with power to consider and adjust such claim or controversy, subject to ratification by the legislatures of the States so affected.

Nothing herein contained shall prevent the adjustment of any such claim or controversy by any present method or direct future legislative action of the interested States.

Article VII. Nothing in this compact shall be construed as affecting the obligations of the United States of America to Indian Tribes.

Article VIII. Present perfected rights to the beneficial use of waters of the Colorado River system are unimpaired by this compact. Whenever storage capacity of 5,000,000 acre-ft. shall have been provided on the main Colorado River within or for the benefit of the Lower Basin, then claims of such rights, if any, by appropriators or users of water in the Lower Basin against appropriators or users of water in the Upper Basin shall attach to and be satisfied from water that may be stored not in conflict with Article III. All other rights to beneficial use of waters of the Colorado River system shall be satisfied solely from the water apportioned to that Basin in which they are situated.

Article IX. Nothing in this compact shall be construed to limit or prevent any State from instituting or maintaining any action or proceeding, legal or equitable, for the protection of any right under this compact or the enforcement of any of its provisions.

Article X. This compact may be terminated at any time by the unanimous agreement of the signatory States. In the event of such termination all rights established under it shall continue unimpaired.

Article XI. The compact shall become binding and obligatory when it shall have been approved by the legislatures of each of the signatory States and by the Congress of the United States. Notice of approval by the legislatures shall be given by the Governor of such signatory State to the Governors of the other signatory States and to the President of the United States, and the President of the United States is requested to give notice to the Governors of the signatory States of approval by the Congress of the United States.

In an address before the San Francisco Chamber of Commerce on Nov. 29 and again before the Commonwealth Club of the same city on Dec. 1, Secretary Hoover stated that the development of the Colorado River would make possible the irrigation of 4,000,000 acres of land, bringing the total acreage benefited by its waters up to 6,500,000, and incidentally develop 4,000,000 hp. of electrical energy, or more than twice the amount available in the whole Sierras. There is thus an asset to be added to the nation in agricultural area larger than the state of Maryland and capable of supporting 3,000,000 people. At the same time the fertile valleys of Arizona and California jeopardized each year by the rush of waters occasioned by melting snows, would be protected from floods.

Secretary Hoover said further:

"It should add 2,000,000 acres of fertile land to California and Arizona and as an incident, present these states with nearly 1,000,000 horsepower. If, during the century to come, even more water can be availed of, another great site for a dam exists at Glen Canyon, where almost a similar sum of water can be secured and thus it would be possible to save every drop of water from the high flows of certain years to the shorter years of lesser rainfall, until the day will come when every drop of the Colorado River can be spread over the land. It is therefore the view of the commission that the next step to be taken is the erection of sufficient of this dam to comprise safety from floods and to give storage for another million acres of land—and I earnestly recommend it to your support."

DISCUSSION



W. L. Goodwin Presents Views on Retailing of Electrical Merchandise

To the Editor:

Sir: I have read with much interest the editorial in the Nov. 1 issue of the Journal of Electricity and Western Industry, entitled "Evolution of Merchandising of Electrical Appliances."

If you will permit me to express an opinion, may I call your attention to the fact that if the electrical industry is going to succeed over a long period we should ever strive to make our retail service a complete operation. I believe that the proper sale of electricity and its various products will never be done in the right decent way, commensurate with the importance, responsibility and dignity of the industry, until we offer to the public from electrical shops as nearly as possible the complete electrical service.

Granting that the present order of things does not permit of the successful conduct of a combination merchandising, contracting and servicing operation, it is no reason why we should not strive for that end. I quite agree that the man possessing the combined talents of a contractor and a merchandiser is rare. Perhaps in the final analysis the successful retailer will be represented by several personalities making up the combination of a successful business entity.

Obviously, there are many obstacles to overcome. Margins commensurate with proper capital investment and set-up are one of these requirements and this whole question is gradually but surely being solved.

From my observations over the country I would say that your editorial reflects a situation which prevails mainly in the large centers. Here, undoubtedly, we find a momentary necessity for the segregation or specialization of the several units of the business, but after all is this not procrastination? If we view the situation in many of the large cities we find the contracting business getting worse instead of better. Competition and methods are becoming almost unbearable and there is not much to be hoped for in a bright future for the contractor. If it were possible to survey the country we would probably find that as many failures were recorded among exclusive contractors as among the combination of contractors and dealers and likewise as many failures among the exclusive dealers as among the contractor-dealers.

I wish it were possible for the Society for Electrical Development to conduct a nation-wide survey to determine the facts and establish clearly the underlying causes, but we are not financially in a position to make such an extensive survey. Perhaps the time will come when we will be able to do this.

The whole thought I have in mind in writing you is that we should look far enough into the future

and conduct a course of development in the industry along sound lines and be ever mindful of the industry rendering the kind of service that the public expects to receive from electrical people. By and large they cannot get the service which they demand from either central stations, contractors or dealers. There are a few exceptional cases where a combination service is offered. I think there have been entirely too many arguments presented as to what the electrical industry should do in this or that case based on what has been done in other merchandising lines. The parallel does not exist, in my estimation. What they are doing in department stores, in the specialized industries of clothing, shoes, etc., is not a criterion for the electrical industry to follow. These specialized industries have existed for generations. Most of the merchandising operations of these institutions, as reflected in the daily advertisements of the bigger and better merchants, are nothing more nor less than a public announcement of certain wares at certain prices. A white goods sale on Monday does not involve any educational features. Women respond because they know almost by instinct all of the factors involved in the purchase of white goods. A similar announcement covering our most important product would fall almost on deaf ears; first, because only a small part of the community is interested in our proposition and second, because we have a long period of educational work before us before we can hope to find the electrical industry merchandising upon lines and with goods that are fully understood by the public.

Notwithstanding the momentary difficulties that we encounter in the complete and combined service and even conceding that there will always be a field for the specialist, be he contractor, jobber or dealer, should we not, at least in the editorial columns, constantly keep before the industry the necessity for developing our business along lines which will ultimately give to the public the right kind of service and at the same time offer profit and reward for men of ability with proper capital to succeed? There are many faults in the present situation. Human deficiencies, such as the combined talents of a merchant and a contractor, are but one of these deficiencies. The lack of understanding on the part of the public, the code, insufficient margins, the necessity of the contractor dealing through second or even third parties are all contributing factors.

Nothing has happened during the past several years which has caused me to change the opinion I held many years ago, namely, that we should continually strive towards the combined service operation. Whether this service will be performed exclusively by public utility companies, by contractor-dealers or by a combination of all, time alone will tell, but if we study other lines of industry we should have no

difficulty in arriving at the conclusion that the complete service is necessary if electrical companies are to survive in our highly competitive commercial structure.

WM. L. GOODWIN,
Assistant to the President,
The Society for Electrical Development, Inc.
New York, N. Y., Nov. 17, 1922.

Objects of Joint Committee for Business Development Are Announced

To the Editor:

Sir: The Joint Committee for Business Development has reached the turning point and is ready now to go "full speed" ahead, as is evidenced by the statement regarding the objects and organization of the body. The Joint Committee is organized as a permanent institution and its activities are not in the nature of a campaign. The statement, recently authorized, is a commitment, not only to the electrical industry but to the public, of the platform upon which the organization will operate.

The objects of the Joint Committee for Business Development are to stimulate and increase the use of electricity for every purpose, formulating ideas and developing plans which will be placed in the proper affiliated agency for execution.

The slogan "Electrify" has been adopted as its message to the trade and the slogan "Do It Electrically" as its message to the public.

The Joint Committee for Business Development stands in a unique position as an advisory commercial agency for the whole electrical industry. Representation on the Joint Committee from all branches of the industry makes it possible to harmonize and consolidate the electrical development movement, bringing together various minds on any commercial idea or problem that might be presented. A majority opinion of such an organization should represent the general viewpoint of the industry and will result in a concerted movement by each of its agencies, and a more effective and rapid development obtained than has heretofore been possible.

Through its affiliation with allied associations, each of which has representation, the Joint Committee can receive from them suggestions as to what may be accomplished by joint action in furthering the work in their particular fields.

The Society for Electrical Development will operate under the general direction of the Joint Committee for Business Development or its executive committee, insofar as work affecting the program of the Joint Committee for Business Development is concerned.

The Joint Committee, having access to valuable information, will be in a position where ideas and plans can be developed. After development such plans will be put into practical form by the proper agency affiliated with the Joint Committee, either in the form of circulars, literature or statistical data which will be sent to its correspondents throughout the country.

The forming of local committees of three men or more, usually a contractor, dealer, jobber and central station man, is one of the first tasks of the Joint Committee, and considerable has been done in this direction.

These local bodies are asked to elect one of their members to be the contact man of the Joint Com-

mittee. To him will be sent such information as the committee prepares from time to time, and he in turn after consultation with his associates can put the information and service rendered by the Joint Committee to practical use where it applies to the local situation.

The enlarging of such local committees to clubs or leagues is desirable and is part of the program, and plans for accomplishing this result will be available through the Society for Electrical Development when wanted.

It is obvious that the stimulation of business can be carried out more rapidly by local effort properly organized and that such efforts must not be spasmodic but will be much more effective if carried on continuously.

Manufacturers, jobbers, dealers, contractors, central stations, or others engaged in the electrical business should suggest definite plans or activities to the Joint Committee for consideration.

A study of the literature and data already available and which is intended for general use, issued by the various associations and companies, is being made to the end that it be placed before a larger audience.

It must be obvious that electricity cannot be used without some sort of appliance, therefore anything that can be done to increase the sale of electrical devices will accomplish the purpose. If more devices are sold it means more wiring, more supplies and more electricity to be furnished. Stimulating the sale of merchandise stands out as a big work to be accomplished.

The Joint Committee for Business Development comprises representatives of contractors, dealers, jobbers, manufacturers and central station organizations including:

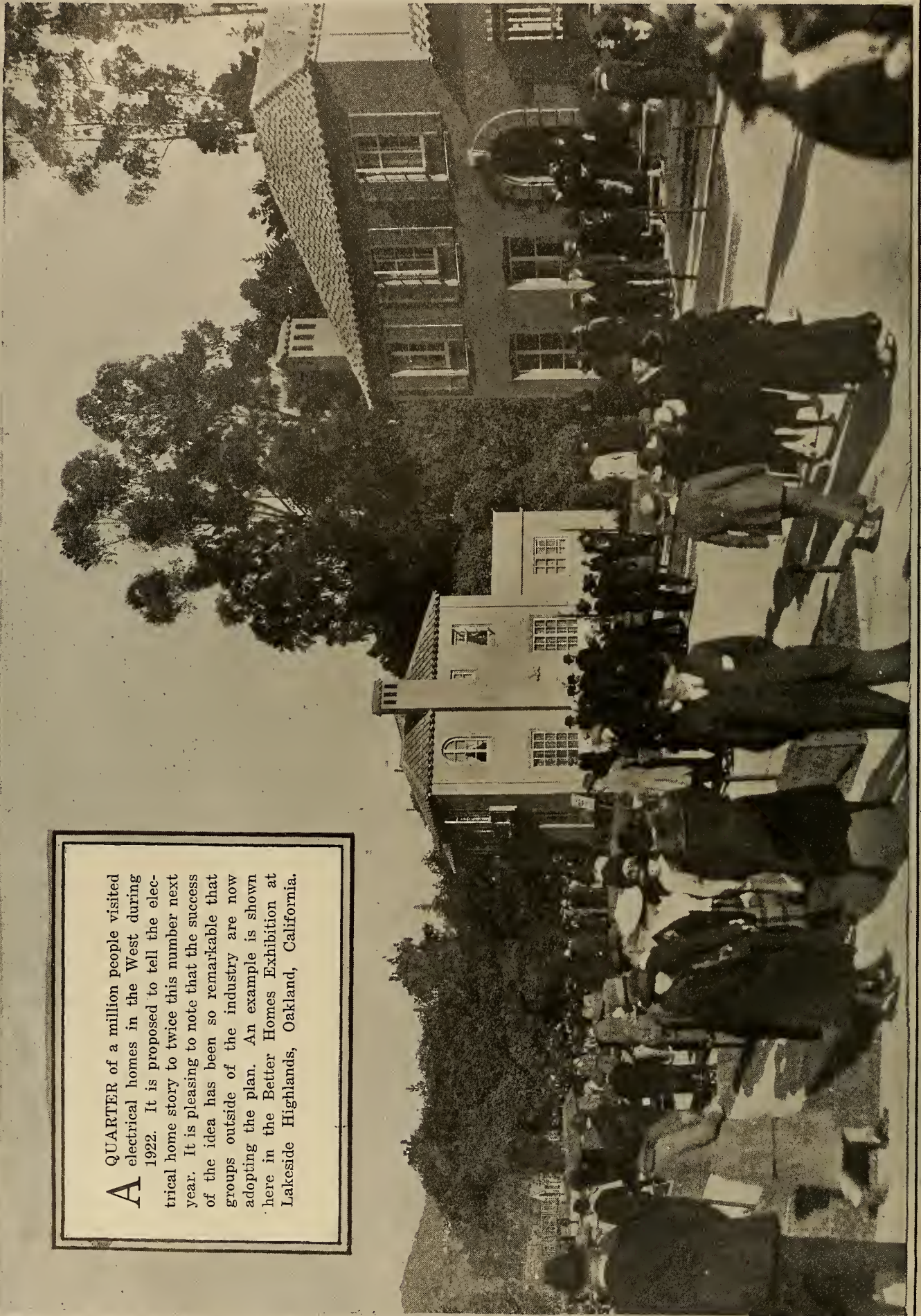
- Association of Electragists—International;
- Canadian Electrical Association;
- Electrical Manufacturers' Council (Associated Manufacturers of Electrical Supplies, Electrical Manufacturers' Club and Electric Power Club);
- Electrical Supply Jobbers' Association;
- Fixture Dealers Society of America;
- Illuminating Glassware Guild;
- National Council Lighting Fixture Manufacturers;
- National Electric Light Association;
- The Society for Electrical Development.

The Joint Committee for Business Development is organized with an executive committee and a headquarters staff and includes six departments: Domestic and Industrial Appliances, Electric Lighting, Electric Power, Electrical Transportation, Industrial Heating and Melting, and Wiring; and three general committees: Advertising Committee, Allied Industries Committee, and Press Committee.

The formulation of local committees with one man as committee correspondent has been started. In cities where there are electrical leagues or clubs the secretary or other authorized person will be the correspondent. In the case of local, state, district and national associations, there will be additional channels through which information and suggestions will be distributed.

E. W. LLOYD, General Chairman,
Joint Committee for Business Development.
New York, N. Y. Nov. 22, 1922.

A QUARTER of a million people visited electrical homes in the West during 1922. It is proposed to tell the electrical home story to twice this number next year. It is pleasing to note that the success of the idea has been so remarkable that groups outside of the industry are now adopting the plan. An example is shown here in the Better Homes Exhibition at Lakeside Highlands, Oakland, California.



Alhambra's Electrical Home



NOAH did not wait for the rest of the community to back him up in the construction of the ark. If he had, undoubtedly the rising flood would have caught the leading citizens of Babylon holding their fifteenth organization meeting and get-together dinner with the ark unbuilt and the question of

Noah's qualifications for the captaincy of the vessel still unsettled. Let the enterprising contractor-dealer who senses the rising flood of prosperity and realizes the potency of the home electrical as a means of increasing his business, pattern his steps after Noah, stage an electric home exhibition himself, and be on the boat when the flood hits his town. It can be done.

It is doubtful if R. E. Heerman, president and manager of the S. & H. Service Electric Company, Inc., of Alhambra, Calif., gave the biblical Noah a thought when he visited the Adobe Electric Home in Los Angeles two years ago, but he came away with an idea. Alhambra is a small town—principally residential—with a population of 14,000, but it was growing rapidly. There was a cloud on the horizon, one of those clouds with a silver lining, for boom times were coming. Mr. Heerman did not require a heaven-sent vision to enable him to see the possibilities of an electric home in such a community, nor to see the effect such an exhibition would have upon the sale of appliances and the wiring con-

By George C. Tenney

HOW R. E. Heerman, enterprising electragist of Alhambra, Calif., staged a highly successful electric home and increased his business \$1000 per month at a total cost of \$148.50.

tracts he might secure. There is a message for every contractor-dealer in the story of how he staged the home and the benefits which are derived in the way of increased business.

To get back to the idea which Mr. Heerman brought away from the Los Angeles Electric Home. Such an ex-

hibition in his community, he believed, would give his store direct personal contact with at least 5,000 people at a small cost. The display would be realistic and consequently more effective in telling the story of the service which his establishment was ready to render to the community. It would cost less than newspaper advertising for it would reach more prospective customers and it would carry with it an immense amount of publicity which could be secured in no other manner.

With this in mind, he began his plans. His proposals to the electrical industry aroused some interest. Yes, an electric home would undoubtedly be of value, but think of the organization work, the money and the energy required to stage such an exhibition. This reception necessitated a change in his plans. He sought out A. A. Tennyson, who was as enterprising a contractor and builder as Mr. Heerman was an electragist. The builder immediately saw the potential advertising value of an electrical home to his own business, and offered to cooperate in the construction of the dwelling. The task was then half finished.

Where to build the home? The real estate dealer who was approached did not require a battery of economic experts to show him where he would benefit. He had to spend plenty of money anyway to get prospective purchasers to his newest subdivision and here were two men who offered to make the task easy for him at half the cost. Moreover, he was planning to subdivide an orange grove on the edge of the town, making it an exclusive residential



The bed room with the appliances in the proper location

tract. The electrical home would form a splendid basis for the publicity and advertising campaign which would be launched by the real estate dealer at the opening of the tract.

When the plans for the home started to take shape, they went forward with a rush. At this stage the electric home was to be built by A. A. Tennyson in a subdivision to be opened by J. Homer Hough & Company and it was to be completely electrified by the S. & H. Service Electric Company. An architect, Scott Quintan, was secured to draw the plans, Mr. Heerman supervising the electrical details. When the plans were ready, Alhambra merchants were interviewed. The Campbell Music Company offered to install the electric piano and phonograph; the Home Furniture Company would furnish the house; the Alhambra Hardware Company would supply the hardware; the Alhambra Cabinet Company, the cedar chests and cabinets, and Gorrell & Sons would do the painting and decorating.

The home exhibition was now ready to launch. To date, the cost to Mr. Heerman was exactly nothing,

if the time which was required to secure the cooperation of the various merchants is not included.

It was decided that each merchant should advertise his participation in the home as he saw fit, and that there would be no central advertising fund. In the end this proved most effective. The only cooperative advertising that was done was the securing of a cut illustrating the home, which was printed on the stationery of those participating in the exhibition during the time the home was displayed.

By mutual agreement, the publicity and advertising campaign was launched immediately preceding the opening of the home for display. Favorable comment was aroused and publicity secured in both the local and the Los Angeles papers. No committees were required to secure this publicity as in each case the editors of the papers realized the news value of the electric home story.

The wiring of the home was done by the S. & H. Service Electric Company although bids for the work were called by the builder and that company's bid was \$50 high. The job was secured on a quality basis. The fixtures which were installed were taken from stock and the larger appliances secured from the electrical jobbers on consignment. Only such appliances as could actually be used by the housewife were displayed and they were placed in their proper locations.

Before the exhibition there was some doubt as to the advisability of the S. & H. Service Electric Company maintaining a demonstrator at the home each afternoon and evening while the home was on display. Consequently a series of cards were prepared, telling the story of each appliance or explaining the various features of the wiring. These cards were advantageously placed. The cards were large and bore the name and trademark of the company. That in the bedroom said:

NOTE!

Rozelle Glassware
Electric Curling Iron
Electric Hairdryer
Electric Vibrator

Another which was posted on the side of the garage beneath the meter box follows:

NOTE

Meter on Side of Garage
No Meter on Porch
No Wires to House

Each convenience outlet was plainly placarded and almost every appliance had attention directed to it by means of a sign.

Previous to the opening of the home the S. & H. Service Electric Company ran a series of advertisements in the local paper, calling attention to the home and its opening date. All those connected with the exhibition did likewise. Invitations were sent out by Mr. Heerman on the electric home stationery to everyone on his prospect list, which included 5,000 names. The text of the invitation, which was printed in display type, follows:

"You are most cordially invited by the S. & H. Service Electric Company, Inc., Alhambra's progressive electrical dealer, to inspect the Model Electrical Home at 1000 South El Molino Street, Alhambra. Open afternoons and evenings commencing Tuesday, Sept. 12, 1922.

"The Model Home has been built and completely furnished, including all modern electrical appliances, by local artisans with materials supplied by local merchants. All electrical work, electrical appliances and fixtures furnished and installed by S. & H. Service Electric Company, Inc."

When the home opened, one of the sales solicitors employed by the contractor-dealer was on the premises to conduct visitors through the home and to explain the electrical features. It was planned to do this only on the first few days of the display. However, the salesmen, who are employed on a commission basis, secured so many prospects and sold such a quantity of appliances while at the home, that there was no time when a guide was not avail-

able. The sales made on the floor of the home during the time it was open for public inspection, were approximately \$2,300.

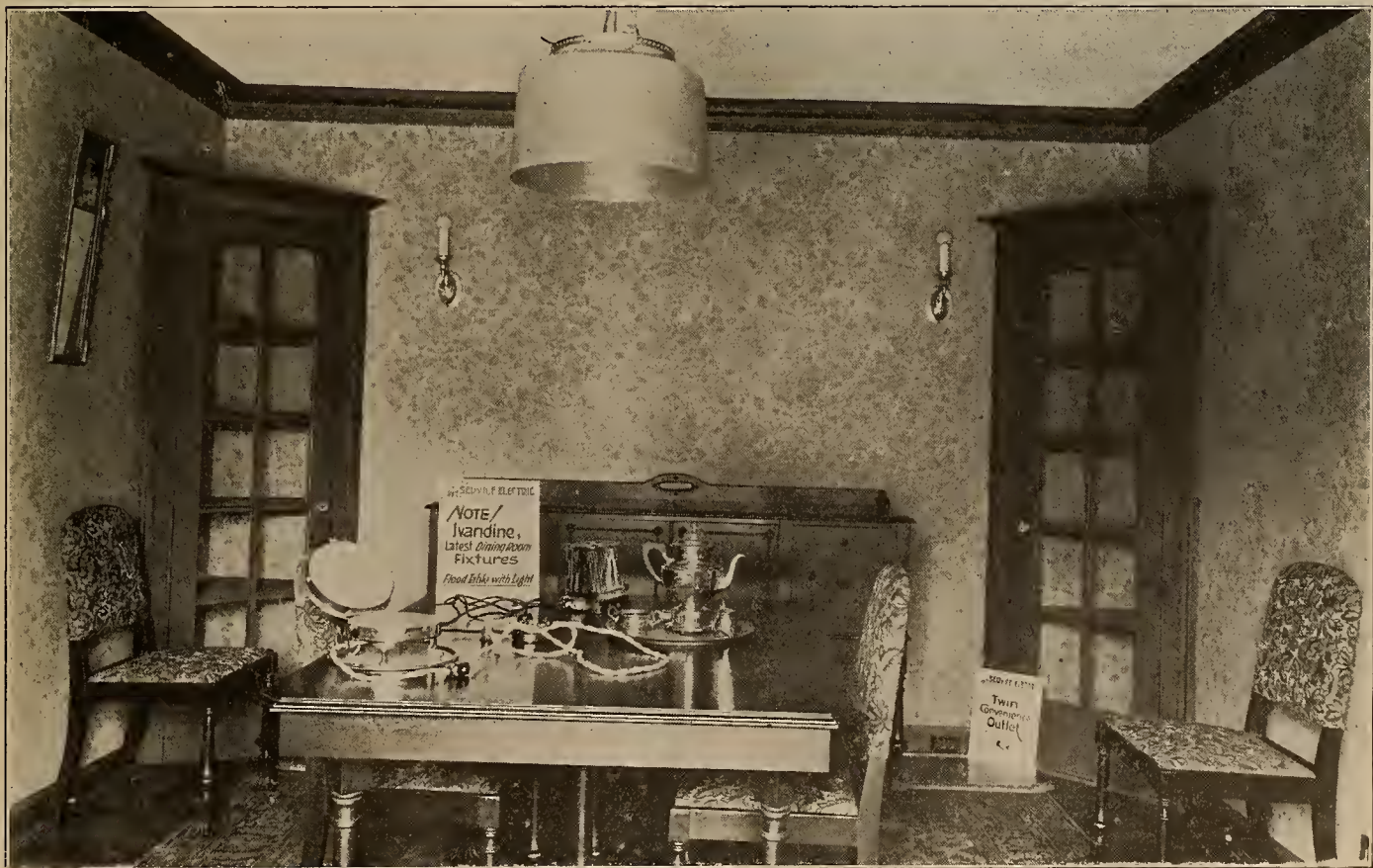
By means of a register which visitors were asked to sign. Mr. Heerman secured 2,500 new prospects for his mailing lists. These names will be segregated and solicitors will follow them up with regular calls at a later date.

The home was visited by more than 5,000 people. The total cost to the S. & H. Service Electric Company for telling its story to these people was \$148.50, or less than three cents per visitor. This was segregated as follows:

Signs and lighting.....	\$17.00
Photographs and cuts.....	17.50
Newspaper advertising	45.00
Circulars and stamps	47.00
Miscellaneous	22.00
	<hr/>
	\$148.50

No estimate of the value of the time of Mr. Heerman spent in promoting the display can be made. It is needless to say that he has been amply repaid.

For the contractor who is planning to exhibit a home under similar circumstances, an estimate of the amount of business which he might expect is as desirable as an estimate of the amount of money he will have to expend in staging the display. It has been stated that salesmen of the S. & H. Service Electric Company took orders for approximately \$2,300 worth of appliances and fixtures on the floor of the home while it was being displayed.



This dining room fixture brought a dozen orders for similar fixtures. Note the judicious use of signs calling attention to the electrical feature.

The first indication of business at the Alhambra store which was directly traceable to the home was in fixtures. For some months there had been on the shelves a considerable stock of dining room fixtures, one of which was used in the dining room of the electric home. Inquiries about these fixtures began immediately after the home was opened. Within two weeks after the exhibition closed, the entire stock of the fixtures was sold out and more had to be ordered.



Three important adjuncts to the electric home, the sewing machine, the vacuum cleaner and the ironer

The following comparison of sales for September and October, 1922, the months during which the home was displayed, with the same months in 1921, best shows the amount of business which the exhibition brought.

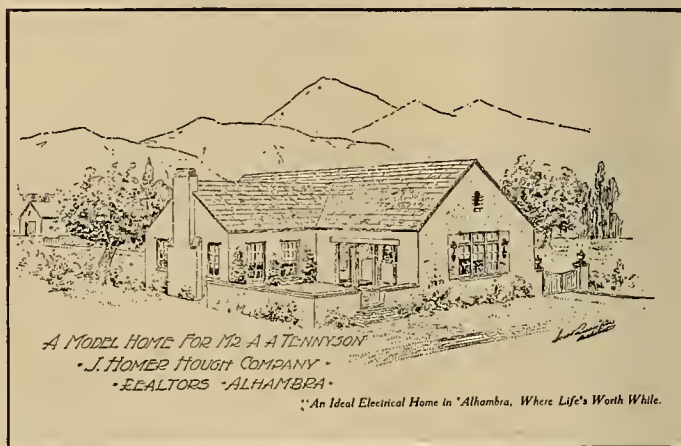
Month	1921	1922
September	\$4,200.50	\$7,869.78
October	4,050.65	9,050.66

Mr. Heerman is conservative, for he estimates that but 25 per cent of the increase shown above is directly traceable to the electric home. He attributes the remainder to natural business growth and better merchandising methods. He is sure, however, that the electric home has increased his business approximately \$1,000 per month and that its effect will be felt for at least a year.

In addition to the above, the company has secured 25 wiring contracts since the display closed, due directly to the home. Every one of these jobs has been secured on a quality basis. In one instance the company's bid was \$125 higher than the lowest

bid, yet the job was secured. Every one of the 25 jobs has been obtained in the face of ruinous competition from curbstone contractors. A contract which will approximate \$3,000 has also been signed calling for the wiring of a home even more completely than the electric home was wired. This home will contain 14 electric steam radiators, two electric water heaters, an electric range, and a large number of appliances.

Results such as those obtained by Mr. Heerman are within the reach of every contractor-dealer who believes that service is the basic policy of good business. Service, quality and sound merchandising principles backed by energy and enterprise spell



This cut of the home was imprinted upon the stationery of all merchants who participated in the exhibition

success for the electrageist as well as for any other merchant.

The electrical contractor-dealer who is obsessed with the idea that an electric home is a thing which requires large expenditures of money and time, and one from which he will receive no benefits, should profit from the experience of Mr. Heerman. There are numbers of Alhambras in the West and there is an enterprising electrageist in each one of them. Let them take a tip from Noah and launch an electrical home of their own. R. E. Heerman did. It worked out so well that he is already planning the Second Alhambra Electric Home to be displayed within a year.

ELECTRIFICATION OF SWISS RAILROAD

Not many, if any, persons can remember the epochal transformation of Alpine travel when railway tunnels between Italy and Switzerland were substituted for the time-honored stage coaches going over the top; but that improvement was hardly less important nor more appreciated by travelers than the electrification of the Gotthard line, now completed and in operation, according to a report from Consul General James J. Murphy.

In the light of experience with electrification up to the present time, the installation, from a technical point of view, is entirely successful. The movement of trains is just as regular as steam locomotives; the passengers and the railroad personnel appreciate highly the elimination of smoke; and there is no doubt but this is an important step forward, hygienically.



The attractive electrical home of A. E. Wishon, in Fresno, California

The Electrical Home for the Electrical Man

By Norman S. Gallison

ONE of the severest indictments against the electrical man is that, in the use of domestic devices, he does not practice what he preaches. Investigations show that the percentage of electrical appliances in the homes of electrical men is no greater than in the homes of non-electrical men. One investigation of 6,700 homes showed that out of this group of people whose business it is to sell electric service in the home only about twenty per cent use any of the appliances except the electric iron.

"Selling the Electrical Idea to the Electrical Man" is a constructive piece of work which could well occupy the attention of the various organizations within the industry now designed to educate the public to the many advantages of electricity in the home. There is a general criticism, and a just one, that one branch of the industry often stands in the way of the other. Examples are not unknown of electrical men "knocking" various appliances such as heaters, ranges, and water heaters. Individual organizations could well afford to do missionary work among their own employees to stimulate the increased use of appliances.

Stimulation of the use of electrical appliances by electrical men is today one of the greatest undeveloped resources of the industry. Electrical homes of electrical men represent not only examples pointed to and emulated by the community, but they augur well for the owners' part in forwarding the industry.

One central station manager who believes in the electrical home idea so thoroughly that he owns one himself is A. E. Wishon, general manager of the

San Joaquin Light & Power Corporation in Fresno, Calif. His home, views of which are shown here, contains 263 electrical outlets—and almost every species of electrical appliance known to man. Perhaps because of the support which the central station gives to the electrical idea by thus showing that they believe in it, Fresno not only has had its electrical home, but it has an electrical home district, where the general contractor builds nothing but houses which are fully equipped with convenience outlets and modern wiring.

The main sitting room in the Wishon home, shown on the following page, has 16 outlets, including the master burglar switch which is found in every room and which controls one light in every part of the house. A fine variety of lighting effects is obtainable in this room, where portable lamps and wall brackets may be separately controlled. Note the movable electric fixtures on the mantel-piece which may be shifted to vary the effect, or removed entirely for purposes of cleaning.

Although the tradition of the wood fire has been kept for the sake of its winter beauty, electrical heaters are provided for the practical heating of the house. In the dining room, a toaster, a percolator and a waffle iron help to make an electrical breakfast. Center outlets, so that connection may be made under the edge of the table, provide for convenience in the operation of table equipment. The fixtures for each room were especially designed to fit into the scheme of decoration and both shades and metal work tone in with the coloring of wall paper and woodwork.



Main sitting room and corner of bed room in Wishon home

An electric range, a dish washing machine and a complete outlay of electrical equipment make the kitchen a pleasant place to work, even in the hot weather of summer which helps to ripen that raisin crop for which the country in the vicinity of Fresno is so famous. The pull switch for the light which is installed directly over the electric range is seen below the hood. A small ventilating fan in the ceiling of the hood draws off all odors of cooking and any heat which may be radiated from the kettles themselves.

Washing machine and electric ironer are conveniently situated on the laundry porch. Convenience outlets are at hand for all needs. Outlets are situated some fourteen inches above the floor rather than at the floor level, as a more convenient height for the housewife. An electric motor operates the sewing machine. Electric fixtures are placed considerably lower on the wall in the Wishon home than is the usual custom. They are located about 4 ft. 6

in. from the floor, or, where the light is required at table height, the bracket is even lower.

Switches at each major entrance, convenience outlets near the bed and bureaus, the convenient electric heater and all such other equipment as go to make a bedroom comfortable are found here. A burglar switch in this case is located where it may be reached from the bed. Wall brackets are placed low on either side of the bureau, giving better light without casting shadows. All metal of the fixtures and of the switch plates is especially toned down to fit in with the coloring of the room.

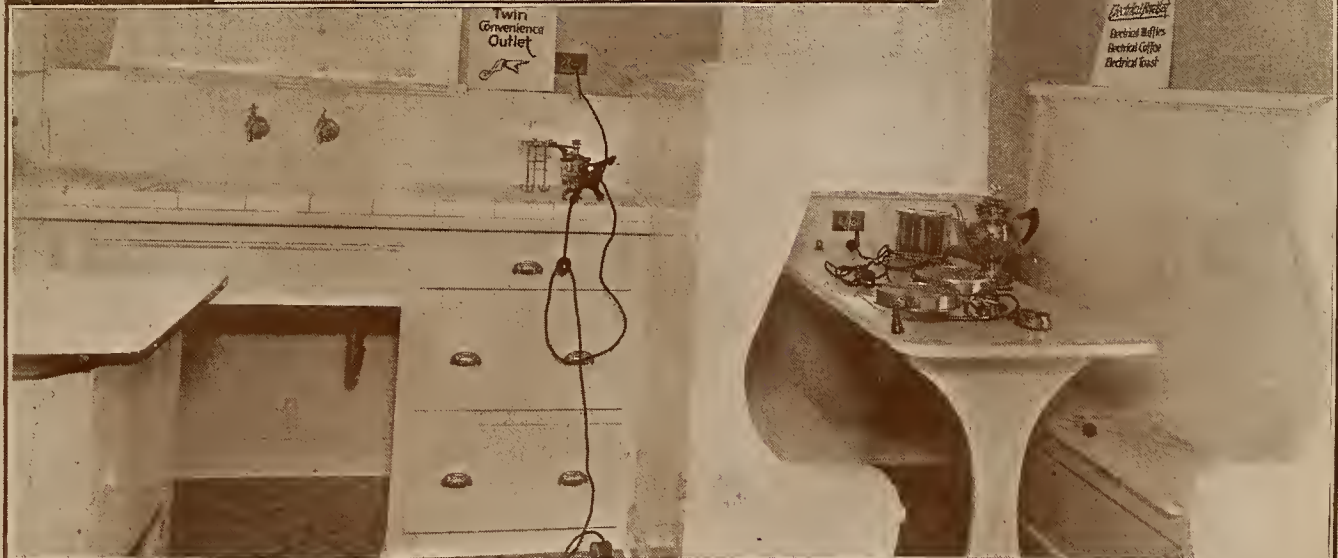
Mr. Wishon has equipped his tennis court with flood lights, making possible the enjoyment of the game in the evening. This adds considerably to the pleasure of the sport, especially in the summer. The switch for the tennis court lights is located in the house near the main switch and fuse panel. Needless to say each fuse on the panel is plainly marked and directions show which rooms are involved.



Kitchen and dining room have the latest in electrical conveniences.



ELECTRIC HOMES TELL STORY OF MODERN HOUSEHOLD SERVANTS



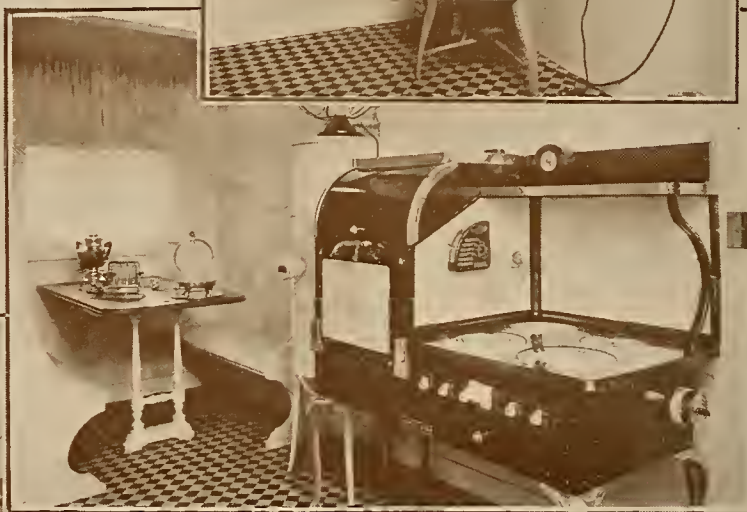
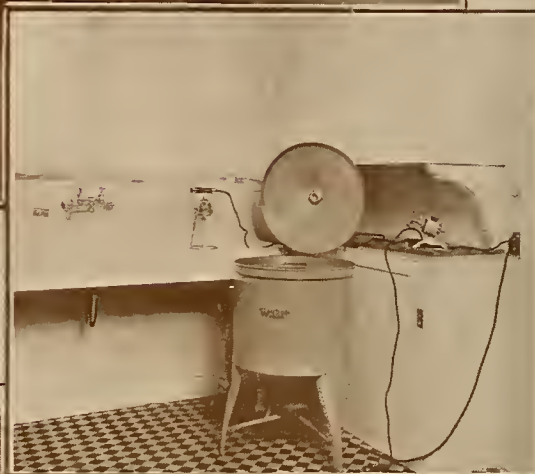
Five thousand people of Alhambra visited the home shown in the upper and lower pictures. In the center is the bed-room of the Denver home. ~ ~ ~ ~



Mt. Baker Home,
Seattle, above.
Oakland Home
Kitchen at
right and below



The Dining Room of the Oakland Home



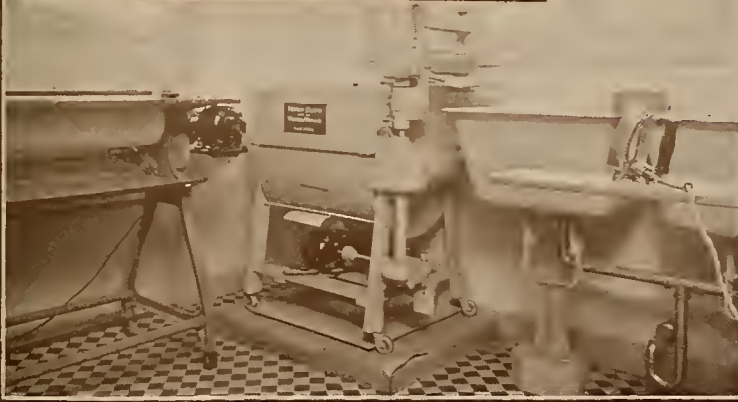
Even a Radio Set in the Living Room of the Mt. Baker Home, Seattle



Above, Dining Room.
Mt. Baker Home.
Sewing Room and
Laundry of Oakland.
Home at left and below



Electric Fire-place in the Oakland Home



A Corner of the Kitchen in the Mt. Baker Home, Seattle



The North Broadway Home, one of two homes displayed simultaneously in Seattle. ❖ ❖ ❖

The Electric Home at the Oakland Better Homes Exposition



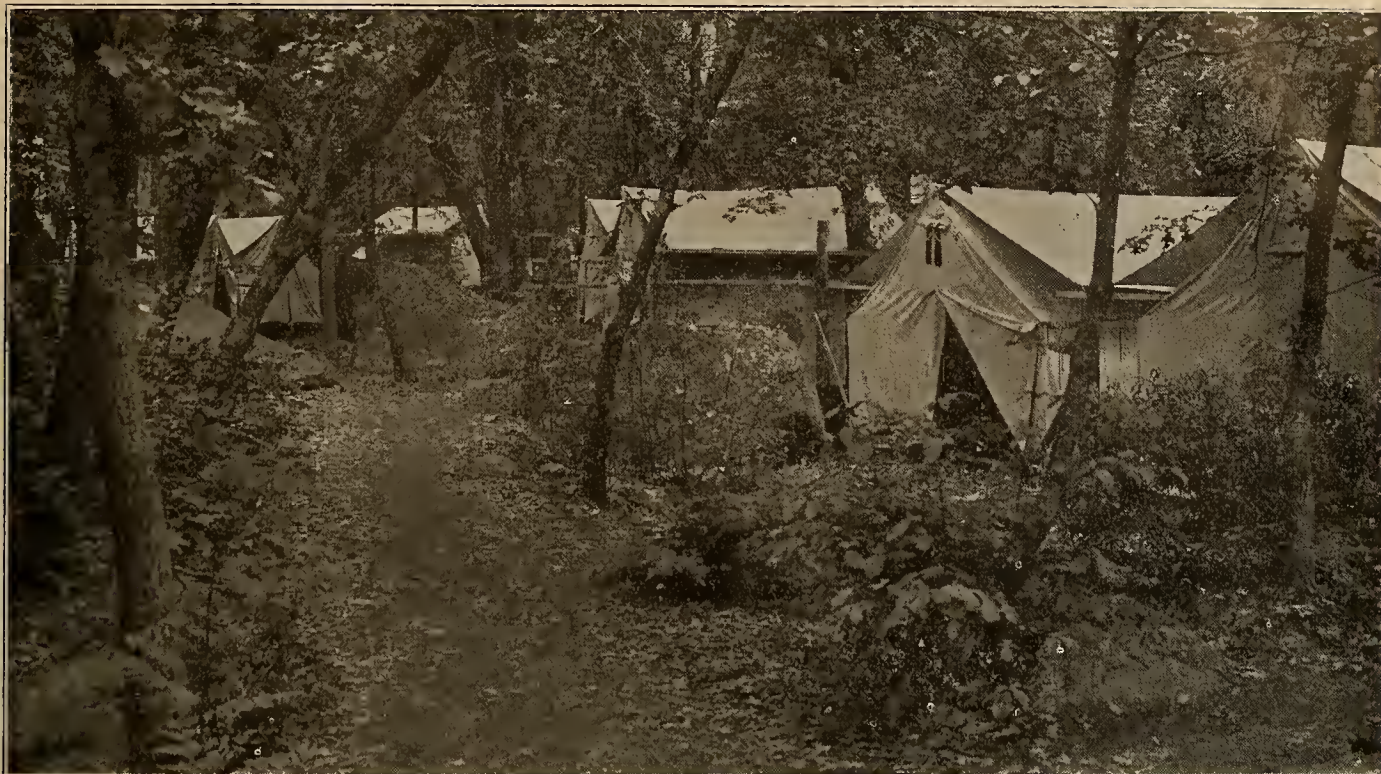
The Den or Sewing Room in the Denver Home



The Living Room in the Vancouver Electric Home, featuring proper illumination



The water heater in the home of A. E. Wishon, Fresno.



Electric lights gleam at night from the picturesque tents at Camp Curry

Modern Electrical Conveniences in a Mountain Camp

By Charles Mathews

SCARCITY of fuel and the abundance of energy in the snow fed, roaring streams dictated experimental electrical installations in Camp Curry, the well known resort in the world famed Yosemite Valley. Such satisfaction has been obtained that today, practically every operation to which electricity can

be applied is being performed by electricity. Power is supplied by the Department of the Interior at reasonable rates. Indeed, without the government power plant opened in 1918, at a point about 6 miles below the Yosemite Valley proper, the Park would still be without its many luxuries. This plant has a capacity of 2,400 kw. with a present output of 1,000 kw. entirely adequate to meet present as well as prospective demands. The timber-faced, log-cut dam of the project contains a concrete diverting chamber with grizzlies, wasteway and intake. A wood stave pipe about 5,300 ft. long carries the water to a 42-in. steel pipe 800 ft. in length, thence to the power house where it is delivered under a 336-ft. head. The capacity of the penstock is 93 sec.-ft., but for the generation of 1,000 kw. only half of the

THE comfort and convenience of doing it electrically is demonstrated to thousands of tourists who visit Camp Curry in Yosemite Valley. Here electricity performs every domestic task to which it can be applied.

amount is utilized. The power is generated by two 1,250-kw., 2,300-volt, 60-cycle General Electric generators running at 750 r.p.m. and direct connected to two Pelton Francis turbines. The excitors are direct connected and are rated at 10 kw., 125 volts. Three 400-kw. oil-cooled transformers step the voltage up to 11,000 for transmission over a distance of 8 miles to Yosemite proper. The power plant is of all concrete construction and cost \$212,000.

To give an idea of the amount of energy required it may be stated that the load for cooking in 1921 at Camp Curry amounted to 150 kw. One large oil range was supplanted by three 22-kw. Hughes hotel type electric ranges. There is also in the kitchen a 3-kw. hotel type toaster and an electric motor driven toaster. This toaster is a great convenience and will turn out 1,700 slices of toast per hour at a cost of three cents per hour for electricity. In addition to the ranges and toaster there has been installed a Hughes No. 300, 25-kw., 220-volt bake oven which meets the demands of 1,000 to 1,500 people per meal. The electric oven has replaced an old brick



Employees' cafeteria, erected in 1922 and equipped with electric range and grill

oven in which wood was used as fuel and which took 24 hours to heat to 400 deg. With the new oven the switches are all turned to high for 4 hours to get a temperature of 550 deg. In connection with the bake oven there has been installed an electric dough mixer which greatly lessens the labor of baking.

Included in the equipment of the camp are conveniences for supplying the guests with a variety of frozen delicacies. The camp maintains an electrically operated ice plant of 2-ton capacity driven by a 20-hp., 3-phase, 220-volt, General Electric motor. In addition there has been installed a Miller ice cream freezer which freezes 10 gal. of ice cream in

15 minutes. Seventy-five gallons of ice cream are consumed each day.

All dishes and silverware are cleaned and sterilized by three Peerless electric dishwashers. Another great convenience in the camp kitchen is a six-compartment Duparquet electric egg cooker which takes care of hundreds of eggs required by the guests in the course of a day. For the purpose of supplying coffee to 350 employees of the camp there is a 6-kw. coffee percolator which completes percolation in 35 minutes.

The laundry which takes care of the entire camp, including the personal laundry of the campers,



Exterior and interior of rustic cabins in the shadow of Half Dome, heated and lighted by electricity

is electrically equipped with 12 ironers, also an electric shaping machine for collars.

Since the camp requires much lumber for the construction of additional bungalows and other new buildings it maintains its own sawmill for turning out finished lumber. This is operated by a 20-hp., 3-phase, 220-volt, General Electric motor.

Electrical Equipment in Bungalows and Tents

Safety and protection from fire is at its highest efficiency in Camp Curry. There is a fire alarm system which extends to all parts of the camp. Employees are well drilled for fighting fire and the water mains carry water from a practically inexhaustible source. The necessity for the complete safety given by this system will be better understood when it is pointed out that the occupants of the camp are in a state of relaxation. They find occasion to use matches while smoking—always a source of danger despite the utmost precaution. With a fire fighting system as complete as that at Camp Curry there is never a cause for fear from that source.

At the present time there are thirty rustic bungalows, each equipped with a 3,000-watt, 220-volt water heater connected to a 60-gal. tank. When tank water has reached 160 deg. the electricity is automatically turned off until the temperature falls below that point.

The average monthly consumption of electrical energy is as follows:

Light	15,000 kw-hr.	at \$0.06 per kw-hr.
Heat	60,000 "	" 0.005 "
Cooking	50,000 "	" 0.008 "
Power	12,500 "	" 0.04 "

The bungalows each have two rooms and in the spring and late fall are heated very satisfactorily with 1,000-watt air heaters. All electrical heating equipment in the bungalows is for 220 volts. The total load is 120 kw. In addition to the bungalows there are sixty tents which are lighted and heated. The total load for heating these is 60 kw.

The general electrification of Camp Curry is made possible because of the small cost of electricity. The rates are six cents per kw-hr. for lighting, four cents per kw-hr. for power, eight-tenths of a cent per kw-hr. for cooking and five-tenths of a cent per kw-hr. for water heating.

The total number of meals cooked on electric ranges for the month of June, 1922, was 120,000. The average cost per meal was $1\frac{1}{4}$ cents per person.

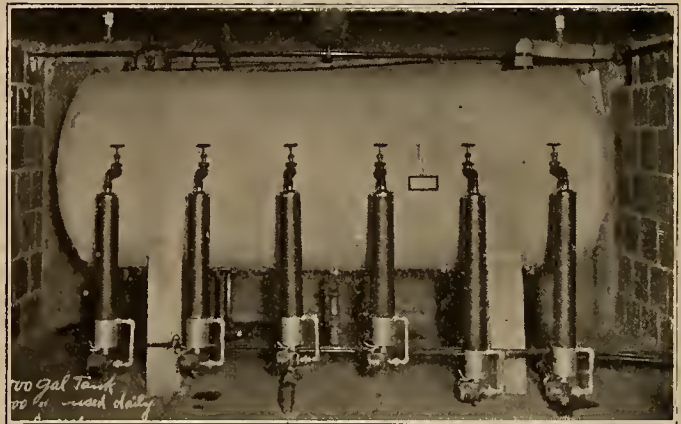
Electrical Equipment Installed in 1922

During 1922 electric lights were installed in 650 tents. The wiring of this number of tents was by no means an easy task on account of the necessity of running in the rear of the tents to hide wires as much as possible; 12,000 ft. of drop cord, 40,000 ft. of No. 12 weatherproof wire, and 1,200 fuse plugs being used. Each tent is equipped with a fuse block using two 6-amp. fuses. In addition, two heavy duty hotel type ranges, one No. 300 Hughes bake oven, and one 6-kw. egg poacher were installed.

A concrete service building in which is found an electrically equipped help's cafeteria, which feeds 350 employees; was also constructed. The equipment

consists of two 22-kw. heavy duty Hughes ranges, one 9-kw. griddle and one 6-kw. coffee percolator. On the same floor is the new up-to-date bakery consisting of two 25-kw., 220-volt Hughes bake ovens and two proofing ovens, in which are installed two special Hughes 1,500-watt heaters, also an up-to-date dough mixer and sifter.

Next to the bakery is a storehouse which is connected to the basement and third floor by a new 2-ton Otis freight elevator. Adjoining the storehouse is a candy factory which is electrically operated. In the basement of the service building a 14-ton Vulcan ice plant is driven by two 20-hp., 3-



Showing the method of heating water in 1,000-gallon tank. The connected load is 32 kw. Four thousand gallons are used daily.

phase motors. Camp Curry sells ice to the campers, but uses the greater portion for camp consumption in ice and refrigeration.

There are at present under construction twenty-two rustic two-room bungalows, each to be equipped with a 3,000-watt Wesix water heater connected to two 30-gal. tanks for hot water and baths. A novel idea has been worked out which will be of great help in the late fall and early spring for air heating by hot water radiator system. The Department of the Interior, which controls the power supply, would not allow the installation of additional air heaters on account of the terrific peak load which would occur during the cold spell. To obviate this difficulty, two galvanized iron radiators, one in each room, are connected to a 30-gal. tank. This not only gives a 60-gal. storage, which the government demands as a storage basis, but also gives even distribution of heat. When the cold spell is over, the radiators are closed and the valve on the extra tank is opened, the 60 gal. demanded by the government being maintained. The temperature in the rooms is 75 deg. when the weather on the outside is 48 deg. This temperature can be obtained in three hours from cold water temperature. The approximate cost per day for electrically heating water is 12 cents. The cost to heat bungalows with hot water radiators, including water heating, averages 25 cents per day. These tests were taken by a General Electric recording ammeter with a current ratio of 15 to 1 under actual working conditions.

ELECTRICITY IN INDUSTRY

By Louis F. Leurey
Industrial Electrical Engineer

The Indoor Drying of California Fruits Eliminates Weather Hazard

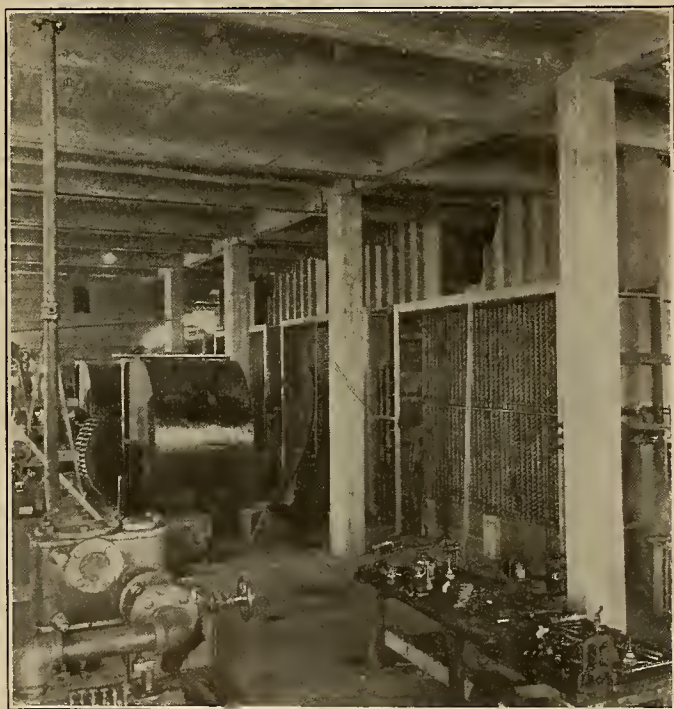
IF HE is to become successful the farmer is coming to realize that he must, as far as is economically possible, remove the many hazards that now make his business one of the most widely fluctuating. Every year he is recognizing the fact that he must make himself more independent of weather conditions.

Conditions of weather probably more than any other factor vitally affect the farmer's prosperity and no one thing has done any more to eliminate the farmer's hazard of weather conditions than the introduction of electricity on the farm. The control of soil moisture alone, by means of electrically driven pumps, has been of enormous assistance, and this, together with the splendid service furnished by the

depend upon the sun drying of their product and an unforeseen and abnormal storm at certain seasons produces calamitous conditions in these drying areas. Each year in the Santa Clara Valley, thousands of prunes are dried in the sun, subject to all the hazards of unforeseen weather.

The accompanying photograph shows a huge artificial drying plant of the California Associated Raisin Company at Fresno. The large group of steam coils shown in this picture furnish the heat, and the power to drive the warm air over the raisins is furnished by large electrically driven fans, which are subject to perfect control for distributing the warm air properly over the fruit. In this way, all hazard is removed from that portion of the crop handled in this plant.

There is a fertile field for the central station companies in the Santa Clara and other fruit growing valleys in the encouragement of well-designed artificial drying establishments which will not only be a benefit to the fruit growers but will form an attractive source of energy outlet for the central station companies.



The steam coils to the right furnish the heat and the electric fan at the left forces the warmed air over the raisins which are to be dried.

weather bureaus, has largely taken the hazard out of the production of such crops.

However, in the harvesting of crops, especially the dried fruit crops of California, the hazard still exists, as many thousands of acres of fruit lands still

Long Life and Low Upkeep Makes the Electric Truck Good Investment

IT HAS now become a well established fact that excluding the battery which carries the motive charge, the useful life of the electrical truck exceeds that of any other class of motor vehicle. As a fine example of this long life, the accompanying picture shows one of the three general vehicle trucks which have been owned and operated by the General Electric Company in San Francisco for over ten years. During this ten-year period, the following battery replacements have been made: on the one-ton truck, in November, 1916, and again in March, 1921; on the two-ton truck one replacement was made in March, 1917; on the three and a half-ton truck, one replacement was made in June, 1918. All batteries now in the trucks are reported as being in first-class condition.

The significant feature of these three trucks is driving chains, and sprockets, the trucks proper are apparently in as good condition as when originally received over ten years ago.

A table of figures furnished by the General Electric Company is given herewith which shows the average monthly cost of operation of these

trucks, together with a statement of the average daily mileage secured:

	1 Ton	2 Ton	3½ Ton
Garaging	\$42.50	\$49.35	\$55.00
(Includes current, washing, etc.)			
Repairs, renewals, etc.	48.13	42.09	40.26
(Includes painting, batteries, etc.)			
Wages	74.63	91.80	110.60
Liability insurance	4.12	4.12	4.12
Fire insurance	2.24	3.48	4.50
Interest	7.60	10.22	11.80
Average daily mileage.....	20	22	13

The electric truck is in many ways ideally adapted to the heavy short haul work in congested down town districts of the large cities. Its perfection of control in traffic, and its great dependability, due to a practical absence of mechanical troubles, makes it especially adaptable to this work.

Its limitation to date has been the difficulty of securing adequate service, as the comparatively small number of these trucks has not yet given garage companies the incentive to cater to this class of servicing.

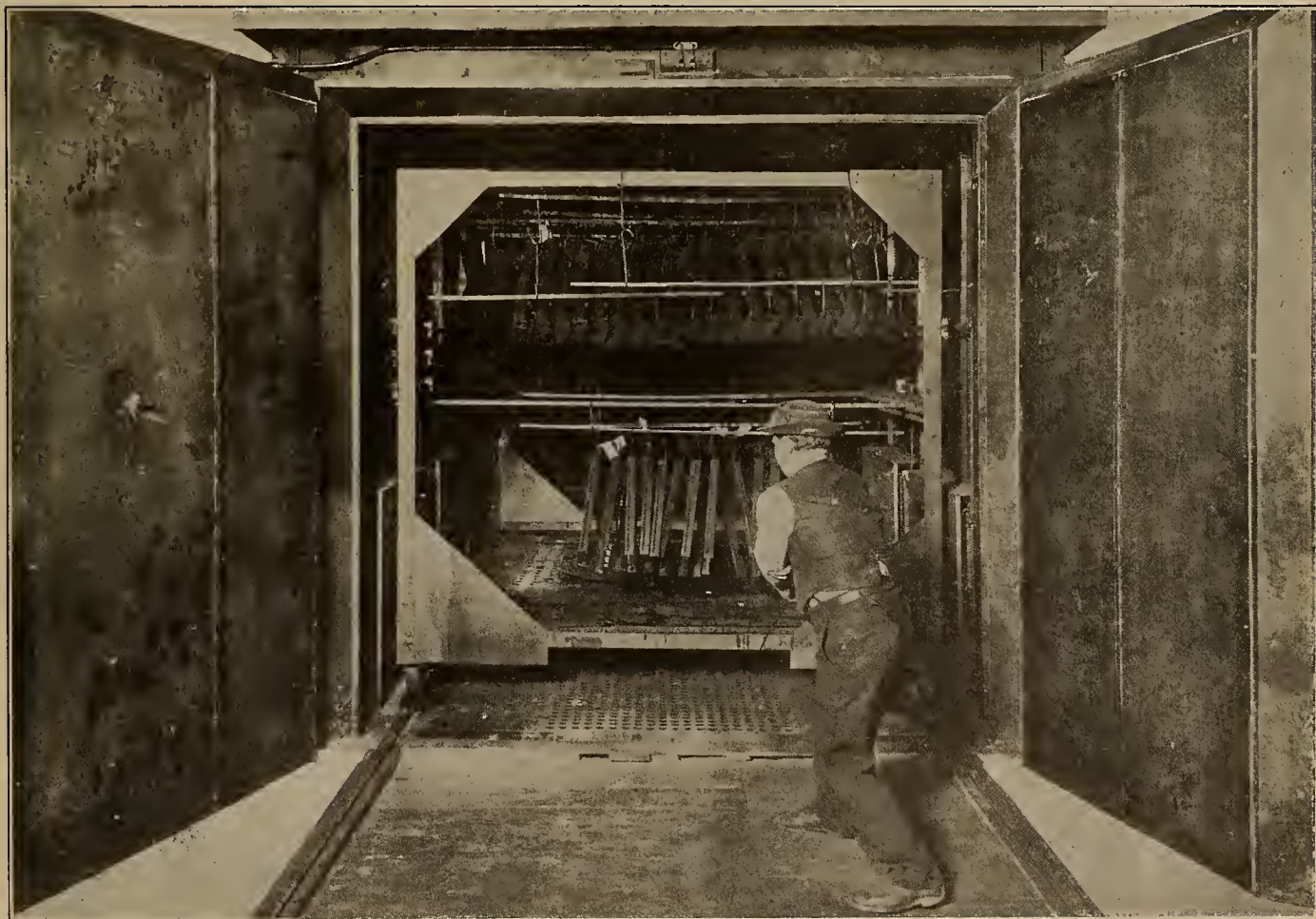
In some large eastern cities with the aid of central station companies, this problem has received more attention and encouragement and in one city a plan was worked out by which unit battery containers were arranged to be quickly demounted from any electric truck, and a complete fresh battery quickly

installed in its place. In this manner the truck operator could purchase mileage almost as freely as



The smallest of the three electric trucks operated by the General Electric Company in San Francisco

the driver of a gas-driven truck purchases fuel; and the radius of action of electrical trucks was thus very materially increased.



Sheet metal furniture being baked in an electric oven. Imitation wood grain and colors are incorporated in the finish with exceptionally lasting wearing effect. The product is much better and stronger than wooden furniture and is lighter. The delicacy of control required to secure even distribution of heat and correct temperature for this work can be obtained only in an electric oven.

JOBBER, DEALER AND SALES AGENT



Benefits Follow British Columbia Home Electric

Electrical Service League Evolves New Plan for Financing Home in Vancouver Which Results in Maximum of Good Will

By REY E. CHATFIELD

One month after the Vancouver Electric Home was closed to the public, a man phoned the office of the Electrical Service League of British Columbia to this effect: "Why, say, I have your electric home beat seven ways—you ought to see my new home. You only had 202 outlets in the electric home and I have 342 in mine. You only had 43 convenience outlets and I have 65." His figures were found on investigation to be correct and he was asked where he got the idea. He answered, "At the Electric Home, of course."

In a few words, that conversation describes the results which were obtained from the sixteen days' exhibition of the first electric home in western Canada, where 21,719 visitors were imbued with the electrical idea. Attendance records for the display were most encouraging, an average of 1,357 people visiting the home daily with a high record of 2,111 for a single day.

To adequately advertise, manage and finance such an exhibition was quite a task for the industry. The chief difficulty to surmount was the question of finance, and this was overcome in a unique way. Through the cooperation of a firm of architects and a firm of plastering contractors the following scheme was worked out.

The selected building supply houses were approached with the proposition that the plastering contractors were financing the building of a model home, which would be exhibited as an electric home by the Electrical Service League of British Columbia, and that tremendous publicity would accrue to the firms supplying material for the home.

Competitive bids were then called for by the architect for the materials needed and the successful bidders were visited by the secretary-manager of the Electrical Service League and a representative of the firm building the home, who in every case succeeded in obtaining a marked reduction in the price for the material specified. The difference between the final price and the first competitive price of the successful bidder was paid to the Electrical Service League by the builder of the home, the local plastering contractors, as the nucleus of a publicity fund. In other words, the building supply houses, lumber mills, shingle mills, etc., bought publicity with their merchandise.

Many firms furnished better material than that specified because they saw

the value of the publicity. However, the builder only paid the Electrical Service League and the supply house concerned, jointly, the competitive price for material specified.

Fifteen hundred dollars was raised in this way toward financing the advertising campaign.

The Electrical Service League contributed approximately \$750 to the publicity fund and assumed the responsibility of managing the exhibition. The builder agreed to pay the net cost of the wiring installation as specified by the League. This scheme earned the interest and support of the entire building trade in the city.

Having thus overcome the chief obstacle, namely—finance, the League was ready to go through with the home.

The publicity campaign started three weeks in advance of the opening of the home, when a large billboard was erected at the intersection of three main driveways, one-half block from the home. This billboard showed a perspective sketch of the home itself, together with an announcement of the location and the date of opening.

On the site of the home another small billboard was erected giving the names of the cooperating non-electrical firms and the material each supplied.

From the time of erection of these two billboards until the home was completed the workmen were forced to work behind locked doors as people were constantly visiting the home in the hope of seeing it long before the date of the official opening.

The week previous to the opening a large advertisement was run in all three newspapers of the city announcing the opening of the home. After the home opened a second advertisement was run in the newspapers and during the last week a third advertisement was used.

The route for automobiles was clearly marked on all possible roads of approach by signs attached to the trolley poles, "To Electrical Home."

Several days prior to the opening date all street cars connecting directly with the line running to the home and cars on that line, carried fender banners. Conductors on the street cars, instead of calling the name of the street, announced at the proper corner, "Electrical Home." Some 400 street car advertising cards announcing the opening of the exhibition of the Electric Home were used in the street cars. This space was donated by the B. C. Electric Railway Company, Ltd., but the League paid for the cards.

Similar window cards and auto banners were furnished all cooperating firms as well as all members of the electrical industry in the city.

The publicity campaign was quite complete and certainly produced results as far as attendance was concerned.



Exterior of the Vancouver home flood lighted for night display



Many novel ideas in arrangement of the electrical equipment were incorporated into the kitchen



The bed room was completely equipped, including a dressing table with the fixtures attached

Every person leaving the home was presented with a booklet which contained a description of the electrical features and a list of the cooperating firms.

Having made every effort to assure a large attendance at the home, it was necessary to handle the crowd. A house committee of fourteen was chosen from the leaders in the industry, each of which had charge of the exhibition staff during at least one day while the home was open.

The chairman of this committee as well as the chairman of the house furnishing committee and wiring committee reported direct to the manager of the home who was the secretary-manager of the Service League. The demonstrating staff was made up entirely of volunteer help recruited from the industry. There were 440 positions to fill and 116 different men were recruited to do the demonstrating and give the talks. Of this number 49 were contractor-dealers, 23 representatives of electrical manufacturers, 18 jobbers' representatives, 19 from the central station, and 7 from allied interests.

The week before the home opened 150 copies of suggested talks for each demonstrator were prepared in pamphlet form and mailed to the demonstrators. The demonstrators did not learn these talks word for word but for the most part the talks were very closely followed.

A master sheet was prepared showing the dates and station each man was to fill and each individual demonstrator was notified in writing that on such and such a date he was to fill a certain station during a definite shift. Demonstrators served in two shifts of four and one hour each.

The day before the opening of the home a private exhibition was held for the families of men in the industry. At this private exhibition and on the first shift the opening day the house committeemen served as demonstrators so that every committeeman was enabled to become thoroughly familiar with every detail of demonstrating the home.

On the opening day a reception to the executives of the various women's clubs

was held and the formal opening of the home was made by the president of the Associated Women's Clubs of Vancouver.

Perhaps the most important men on the demonstrating staff were the door man and the despatcher. The door man counted the visitors with a counting machine and saw that groups of from ten to fifteen only entered the home at a time. These groups of visitors went through the home as a group and were passed from room to room.

The talks in each room were so synchronized that when the despatcher pushed the button controlling an electric bell each group was ready to move on to the next room. The route through the home was arranged so that no two lines of traffic crossed, consequently the visitors were able to see every feature without confusion.

In addition to the two private exhibitions already described, a private exhibition was held for members of the Architectural Institute of British Columbia. No attempt was made to have a full staff on duty for this exhibition, but the architects spent several hours in the home and the men on duty merely answered questions.

Special invitations were mailed for

all three private showings of the home and admission was by invitation.

Adequate wiring installation was the keynote of every talk except the talk by the man receiving the visitors upon their entrance to the home. This demonstrator explained the purpose of the home and the manner in which the appliances were chosen.

As a means of creating a desire on the part of the public for better wiring the exhibition was an unqualified success.

Appliance sales have been stimulated and prospective builders are already calling upon the League for assistance in laying out wiring installations.

As a direct result of the home much residence wiring is coming from the hands of the curbstone contractor to the legitimate contractor-dealer and the convenience outlet idea is sold to many people.

Undoubtedly the electric home has done much to promote appliance and better wiring installation sales, but it also did much to cement together the various branches of the industry, as we had curbstone contractor and legitimate contractor-dealer, jobber salesmen and central station representatives working side by side for a common cause.

Taking the Electric Home Owner Into Partnership

**Calexico Electrical Men, Architect, Builder, Furnishers and Owner
Cooperate to Display Electric Home**

When Dr. and Mrs. A. L. Rice, of Calexico, Calif., signified their intention of building a modern home in the Imperial Valley town, E. W. Judy, district manager of the Holton Power Company, saw an opportunity to give the electrical industry some good publicity and at the same time aid the prospective home owners. The size of Calexico had prevented any cooperative work in building and displaying an electric home and when the announcement concerning the building of the new home was made Mr. Judy visualized a plan whereby it could be used as an electric home for a period of two weeks.

The plan worked out by Mr. Judy provided for the cooperation of the

architect, builder, plumber, painter, house furnisher, decorator, and dealers in electrical appliances as well as the owner of the new home, in building, equipping and furnishing a home which would be ideally arranged for the owner and which could be used for display purposes for a short period. Under the arrangement all of the interested parties, and in addition the general public, would benefit from the cooperative work. The home owner benefited through liberal discounts on the furnishings and appliances installed.

The house was planned from the beginning as a real dwelling, built to live in rather than to sell or to quarter a temporary assemblage of furnishings

and decorations. Throughout the building of the home the Holton Power Company exercised general supervision over the work and furnished suggestions as to the locating of convenience outlets, switches, fixtures and appliances.

At the request of the dealers and contractors, the power company also took charge of the publicity for the home. The local newspapers cooperated with the men interested and gave full and detailed descriptions of the electric home. A four-page booklet was also prepared and given out freely. This booklet contained a picture and descrip-

No attempt to take orders was made at the home during the time that it was open to visitors. Men in the electrical business in Calexico report that after the home was closed to visitors many sales resulting from the display were made and that a large number of prospects were secured for future business.

The consensus of opinion of the men who were instrumental in the display was that it had been a great success and that a great deal of good had been done at a low cost. The arrangement figured out by Mr. Judy was particularly adaptable to the small town and

We are hammers when everybody and their brothers are importuning us to "please accept this job at your own figure."

Then, friends, is the time to make hay, garner the sheaves and get the gravy because—

Shortly the Winter winds will be whistling through our straw derbies, inquiring "how come" you didn't gather the rosebuds while the—

Gathering was good.

Any smart man knows—(I'll take my bend now) that—

"The crying cat catches nothing" and that the kittle before flagging a mouseie must do her stuff entitled:

"Watchful waiting."

And the same goes for the Boys in the Electrical business—because—

I am not concealing anything in my sleeve when I yelp that the Contractor-Dealer, or whosis—in the game—

Who is forever crying about slow sales, poor collections and knocking the business from—

The naughty word to breakfast—

Is not making friends, building a business that will endure or successfully breasting a tide which—

Eventually he will have to swallow.

In fact, Birds of this feather have not learned that: "The remedy against bad times is to be patient with them" and—

As sure as I am putting forth every effort to arrive at the bottom of this column without mortally offending any indulgent reader or—

Two, timing myself—

I know that Men of the Trade must throw away the hammer and pick up the horn and get busy—

Blowing up the business—else, some day they are liable to come to with the realization that they—

Have absolutely nothing to blow about.

"The crying cat catches nothing," I repeat and—by the same token, the man who is continually whimpering about the bow wows over the cadaver of an institution that has gone hay-wire—

Likewise catches nothing but a pitiful lack of sympathy from—

Butchers, bakers, bankers and bond-men.

He is as popular as a lifelong Republican at a Tammany rally and—

Seeing that my space is all gone, I'll close by saying—

I have said it.

Install a convenience outlet on the front porch so that appliances may be used here in the summer or a portable reading lamp set up on warm evenings.

Arrange the kitchen lighting so that there will be no bad shadows on the equipment most frequently in use. Install at least one bracket over the sink and another over the range.



Home built by a Calexico, Calif., doctor and displayed as an electric home through the cooperation of the owner and the men building and equipping it

tion of the home, and detailed the furnishings and appliances installed there.

Prior to the opening, invitations were sent out to the customers of the power company, the dealers exhibiting appliances, furnishings and fixtures, and to many others whose names were obtained from the books of the men interested in the success of the display, so that a general broadcast was made throughout the town. During visiting hours music and refreshments were provided for the guests. Mrs. Rice acted as hostess in her home, which was open for visitors from 1 to 4 in the afternoon and from 7 to 9 in the evening. Nearly a thousand visitors were conducted through the home between Oct. 10 and 24, the time that it was open.

The electrical men of Calexico furnished guides and lecturers, who conducted the visitors through the home. Approximately three-quarters of an hour was the time that each guest remained inspecting the modern structure. E. W. Judy was in charge of the exhibit and had under him F. G. Waite, Fred Nebel-Thau and several other men.

Among the electrical appliances demonstrated in the house were the range, water heater, dish washer, washing machine, ironer, vacuum cleaner, lighting fixtures and baseboard outlets, motored phonograph and player piano. A radio outfit was also included among the attractions. There were in the home forty-one convenience outlets and each was located so that it might be easily used when needed. Every effort was made to make the home practical and to avoid installation of too much electrical equipment in comparison with the size of the house.

could be followed to advantage in other communities where the expense of erecting a home for display purposes would not be justified.

THE ANVIL COARSE

By JOE OSIER

When an old Arabian philosopher (whose name has slipped the thing I am pleased to call my mind) was up against it and did not know which way to turn—

He would flop down on a convenient sand dune, produce a cigarette—preferably Turkish—and—

Mumble this mouthful: "When you are an anvil, be patient; when a hammer, strike."

And, as I have been given to understand that this Arab obtained a mess of solace from this saying, it occurs to me that Men in the Electrical Industry, who are in a corner and—

Are so hungry and do not know where they are going to sleep—

Might hug this truism to their tired ol' hearts and see how far they can get.

"Comes the time," as the fiction writers say—

When all of us, perforce, must be anvils and, come other times, when we are presumed to assume the role of a striker and—

If we play the game as it should be played, we can shine equally well in either character.

As I see it, we are anvils when the times are "tuff"; when jobs are as scarce as redeemed campaign pledges and, by the same token—

The Kitchen
with its
Electric
Range and
Convenience
Outlets



The Home
Electric
and the
sign which
advertised
its Location



Correct
Illumination
demonstrat-
ed in the
Living
Room



The exterior of the Stockton electric home was made more attractive by the growing shrubbery and green grass

Exhibiting Electric Home in Small Community

Stockton Electragist and Builder Demonstrate that Two Firms Can Successfully Display Home Unaided

That it is feasible for the individual electragist in cooperation with a progressive builder to successfully exemplify the "home electrical" idea in the smaller communities has just been demonstrated by the recent completion and exhibition of the first electric home to be displayed in Stockton, Calif.

Most of the electric homes receiving publicity heretofore have been those made possible through the agency of some cooperative league or organization, with a considerable portion of the cost of the undertaking being donated in some form, either in direct contributions, or supplies and labor furnished at cost. This system has not been possible in the smaller communities which have not the advantage of the direct aid of a cooperative or development league of some nature in educational work. To the electragist in such communities, the result of the first attempt to portray the "home electrical" idea in Stockton, should be of great encouragement.

The home was a frank attempt on the part of the builders, the Sterling Building Company and the Home Electric Company, to gauge the interest of the community in homes featuring the idea of electrical service. The attendance figures and the sale of the home, shortly after being opened to the public, were unequivocal answers to their question.

The home is a six-room stucco bungalow, with hardwood floors throughout, tile bathroom, furnace, basement and separate garage. It is moderate in its dimensions and is meant to typify the class of home which represents a medium investment, but with particular emphasis placed on its facilities for electrical service. It was priced at and

sold for \$8,000. During its exhibition to the public it was completely furnished in excellent taste, through the cooperation of furniture and music stores.

In the electrical installation the Home Electric Company did not attempt to carry the idea of a multiplicity of outlets to the extreme, but rather endeavored to show a comprehensive use of electricity which could be secured in any home with reasonable cost. This happy medium was well attained, the wiring system providing thirty-nine luminaire outlets, nineteen convenience outlets and twenty-six switch outlets, some of which follow:

- Front Porch:
1 ceiling and 2 bracket outlets, 1 three-way switch.
- Reception Hall:
1 ceiling outlet, 1 switch, 1 three-way switch, 1 convenience outlet.
- Living Room:
2 ceiling and 4 bracket outlets, 3 switches, 3 convenience outlets.
- Dining Room:
2 ceiling outlets, 2 switches, 1 floor outlet, 1 convenience outlet.
- Kitchen:
1 ceiling outlet, 2 bracket outlets (over sink and range), 3 switches, electric range outlet, 2 convenience outlets.
- Bedroom:
1 ceiling and 3 bracket outlets, 1 switch, 1 convenience outlet, 1 ceiling outlet with door switch in closet.
- Bedroom:
1 ceiling and 4 bracket outlets, 1 switch, 1 convenience outlet, 2 ceiling outlets and 2 door switches in closets.
- Sewing Room:
1 ceiling outlet, 1 switch, 1 convenience outlet, 1 ceiling outlet with door switch in closet.

A comprehensive display was made of all the smaller appliances connected to appropriate convenience outlets and in addition an electric range, an electrically heated and operated mangle, washing machine, dishwasher, motor-driven player piano, and motor-driven

phonograph were shown in operation.

The house was open to the public for inspection for a period of thirty days, during which time an attendant was always present to call attention to the points of interest and explain the use and operation of the various appliances. A check count showed an attendance in excess of six thousand people. Great interest was shown by the visitors and the predominant thought seemed to be one of surprise that a home of that type of construction, with so many electrical conveniences, could be secured at the price at which it was sold. It was striking evidence that the public generally has not yet realized the reasonable cost of electrical convenience and the household economy which such an investment will make possible.

All advertising was in the form of newspaper display carried on by the builders and various sub-contractors, and consisted principally of a general invitation to the public to examine the home, without attempting any description. It was estimated by the builders that the portion of the cost of this advertising which could justly be charged against the electric home idea did not exceed six cents per visitor. In the light of the interest displayed during and since the exhibition, this has been eminently satisfactory to those who bore the expense.

The builders of this home are convinced that the public is interested in electrical convenience in the home and are planning for a much more elaborate display next year, featuring a larger house with corresponding increase in the electrical service, actual cooking, washing and ironing demonstrations, more intensive advertising, and a comprehensive record of the facts and inquiries brought out by those who attend the exhibition. The first electric home has marked a definite step forward in the advancement of electrical service in the home in this community.



The Mt. Baker Home was the larger of the two displayed by the Electric Club of Seattle

Seattle Club Shows Two Homes Simultaneously

Two Distinct Types of Electric Homes in Different Sections of Washington City Draw Large Crowds

When the Electric Club of Seattle planned to sponsor the idea of displaying an electric home in the Washington city, the members of the club decided that to reach the greatest number of people it would be best to erect two homes of different style and cost in different residential sections of the city. With this idea in mind the two homes were built and for the opening an Electrical Week was proclaimed by the mayor of Seattle. One of the homes erected cost approximately \$20,000 and the other entailed the investment of between \$12,000 and \$14,000.

The decision in favor of opening two homes instead of one, according to Harry Byrne, of the North Coast Electric Company, chairman of the executive committee in charge of the homes, was reached after considering the following questions:

First: By locating these homes in different residential sections of the city, greater convenience and ease of access would result to those who were unable to travel to the homes by automobile. The club desired to reach not only prospective home builders, but prospective purchasers of electrical appliances as well.

Second: The publicity necessary to properly advertise one home could be made to serve for both without increased expense.

Third: Homes of different size and cost could be used. One that would appeal to the class interested in a \$7,500 home and the other to the class interested in a \$20,000 or more costly one. All the above advantages were gained and others which were not foreseen.

Fourth: It may be said that our list of attendances includes many duplications and that people who visited one

home also visited the other. While this may be so, it enabled us to get our message to them more effectively, as it was felt that those who were sufficiently interested to visit both homes were undoubtedly very good prospects for better wiring and appliances.

Regarding the educational value of exhibits of this kind and the effectiveness of the advertising which results, members of the committees were unanimous in the opinion that considering the time and money spent in this way, it is unequalled by any other form of campaign in the interest of better wiring of homes and domestic electric appliances. It was the opinion that while these things would undoubtedly come in time without any special effort on the part of the electrical fraternity, these electric homes will advance the day many years.

These homes, one located at North Broadway and Allison Street, known as the North Broadway Home, and the other at 3134 Lakewood Avenue, known as the Mt. Baker Home, were designed and built by Gardner J. Gwinn, a Seattle home builder. Following the show the homes were turned back to Mr. Gwinn.

The electric homes were sponsored by the Seattle Electric Club. The work was done by a committee of club members appointed by Walter E. Jones, president of the organization, and consisted of the following members: Harry Byrne, chairman; S. G. Hepler, H. E. Gleason, Roy Grant and F. W. Rust.

From time to time sub-committees were appointed by this committee, which became known as the executive committee, and the chairman of these committees took their places on the executive committee. Sub-committees

were appointed and placed in charge of plans and specifications and later another sub-committee was placed in charge of the appliances. A speakers' sub-committee and a sub-committee in charge of the reception and the operation of the homes, were also appointed.

The Mt. Baker Home, the larger of the two, was wired for service by F. W. Rust & Company, Inc., and the North Broadway Home by the Arrow Electric Company. In the case of both homes, the various electrical supply houses furnished the materials at cost; labor was furnished at cost and the work of supervision was donated by F. W. Rust, of F. W. Rust & Company, Inc., and S. G. Hepler, head of the Arrow Electric Company.

The appliances displayed at the two homes were donated for the campaign by the various dealers and were returned immediately upon the close of the campaign.

Everything necessary to make the campaign thoroughly educational in its nature, free from every aspect of commercialism, was carefully carried out by the committee. Name plates were removed or covered over and all those engaged in any way in the electrical business were accorded an opportunity to participate. Practically the entire electrical fraternity in Seattle worked in the campaign and got squarely behind it. Because of its educational value and its community nature, the Seattle daily newspapers gave unsparingly of their news columns and the publicity was of extraordinary value.

Mayor Edwin J. Brown proclaimed the opening week Electrical Week and seventy clubs and civic organizations put on special events and entertained speakers furnished by the executive committee of the Seattle Electric Club.

On Sept. 22, the two model homes were thrown open to the public and were dedicated with appropriate ceremonies. Miss Theo Pennington, leading

soprano of the American Light Opera Company, playing at a Seattle theater, christened the homes, Mayor Brown spoke on behalf of the city of Seattle, and Mrs. H. E. Maltby, president of the Seattle Federation of Women's Clubs, officially opened the homes.

The first ceremony was held at the North Broadway Home where Harry Byrne presided, introducing Mayor Brown for the opening address. Mayor Brown in turn introduced Miss Pennington who performed the christening rites. Mrs. Maltby then opened the home with a short address after which it was formally turned over to Walter E. Jones, president of the Seattle Electric Club.

As soon as the ceremonies at the North Broadway Home were completed, the participants hastened to the Mt. Baker Home where a similar program was carried out. Thereafter, until the display closed on Oct. 9, the homes were thrown open from 2 p.m. until 10 p.m.

Both homes, during the campaign, were under the general direction of a house committee headed by Burton R. Stare, of the Burton R. Stare Company. At the North Broadway Home, Walter E. Jones was house manager, with L. R. Grant, James Maitland, Fred Lushington and C. D. Cunningham as his supervisors. Philip F. Apfel, house manager at the Mt. Baker Home was assisted by J. J. Agutter, Herbert A. Boring, George T. Doty and J. George Miles as supervisors.

The house managers and supervisors at each home were assisted by thirty-two lecturers. At the North Broadway Home fourteen lecturers were on duty and at the Mt. Baker Home eighteen were employed daily. In spite of the efficient lecturers in attendance constantly, it was found necessary to take visitors through in small groups. By arranging the routes through the homes, approximately eighty persons could be handled at one time.

During the campaign, according to unofficial figures given out prior to the close of the show, more than 40,000 visitors were entertained and shown through the two homes.

Both homes were completely furnished by the Standard Furniture Company, with rugs, draperies and every article of furniture in proper place and selected to harmonize with the lighting scheme. Pictures and art framed mirrors for the walls were loaned by the Schneider Art Galleries. On the open-

ing day both show houses presented the appearance of being ready for immediate occupancy.

The Mt. Baker Home is a two-story, brick veneer structure, containing eight rooms and a full cement basement in which is located a large billiard room, also a double garage. The North Broadway Home is a nine-room, one and one-half story structure, of stucco construction, having one of the few thatched roofs in Seattle. This home also has a double garage located in the basement, in addition to heating equipment, laundry space, and the like.

The North Broadway Home is equipped with forty-nine duplex convenience outlets; forty-four light outlets; thirty-nine switches, and is wired

for radio as well as for telephone, heating and lights. All wiring is run underground to the poles. The tea cart in the North Broadway Home is equipped with two convenience receptacles and the dining table with three. Three electric bells are also a portion of the modern features of this up-to-date home.

The Mt. Baker Home has a total of sixty-nine lighting outlets, thirty-nine switches, twenty-seven convenience and floor outlets, four heater outlets, a dining room table wired for four outlets and a tea wagon with two outlets, in addition to a great number of other electrical appliances. Service wires enter the home underground as in the North Broadway Home.

Better Homes Exposition Features Electric Home

Visitors to the Number of 42,000 Are Told Story of Electrical Conveniences at Oakland, Calif., Exhibition

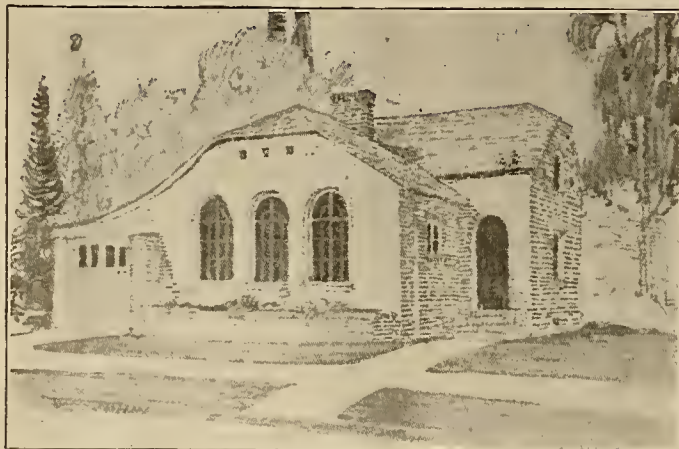
When the Lakeshore Highlands Company, realtors and subdividers of Oakland, Calif., decided to open up the newest residential subdivision in that city with a Complete Homes Exposition, in which ten completely furnished modern homes would be exhibited to the public, the electrical industry, through the California Electrical Cooperative Campaign, had little difficulty in selling the company the idea of including a home electric in the exposition.

During the four weeks which the homes were open for public inspection, the subdividers realized the importance of a home which would show how completely electricity has solved the problem of tedious household duties. Of the ten homes displayed, and the electric home was by no means the most pretentious, it maintained the position of chief attraction at the exposition, its attendance averaging 1,310 visitors daily during the 32 days the exposition lasted. Approximately 42,000 interested home owners or prospective home builders were shown what electricity can do to lighten the housework in a modern home.

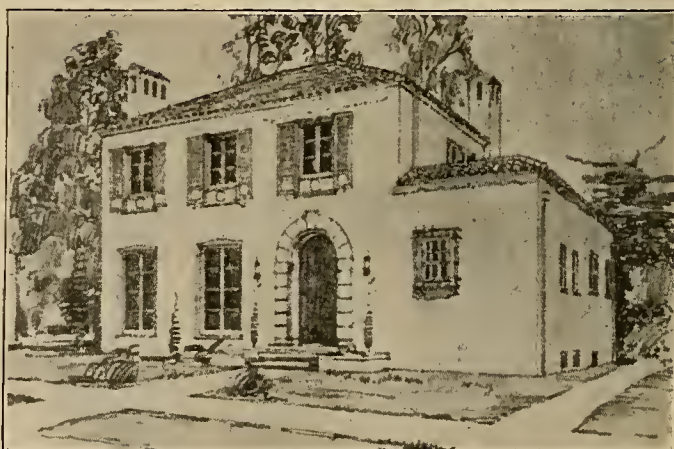
While the electric home was used for the purpose of demonstrating the conveniences and comforts attainable through the proper use of appliances, each of the ten homes was completely wired and almost any one of them might have been used for the same purpose.

The model electric home was one of ten completely furnished modern dwellings comprising the first exposition ever held in America in which every detail of home making was actually demonstrated in a group of specially designed houses conveniently located in the heart of a beautiful residential district. An unique opportunity was thus presented to judge of the merits of the better types of construction, the structural qualities of the various building materials and the advantages of the latest home fixtures and appliances. The ten homes ranged through a wide variety of cost and design, but each was expressive of the best result which could be obtained for the outlay. In the group were two homes of the northern Italian type, two typical Spanish bungalows, two modified Spanish or California bungalows, two modified English cottages, a hollow tile and brick house and an all-redwood bungalow.

The electric home was financed and built by the realtor. It was sponsored by the Oakland Electric Club while W. F. Price, field man of the California Electrical Cooperative Campaign, was loaned to the club to supervise the exhibition of the home. The Pacific Gas & Electric Company and the Great Western Power Company shared the expense of employing a hostess during the time the home was open. One of the central stations furnished the range



The Tile Home, built entirely with brick and tile



The Sloane Home, one of the ten in the Exposition



The living room of the Electric Home contained an electric piano, phonograph and an electric log in the fireplace

while the other furnished the water heater. The air heaters were furnished by the manufacturer while four jobbing houses loaned the appliances which were displayed.

During the hours which the home was on display, in addition to Mr. Price and the hostess, there were at all times two or three lecturers furnished by the Electric Club or by the central stations. That the task in conducting visitors

through the home was no easy one is demonstrated by the fact that on the Sunday preceding National Better Homes Week a total of 4,766 people were ushered through the home. This is approximately 500 visitors per hour.

Important among the results of the display, aside from telling the electrical story to one-tenth of the population in the East Bay district, was the stimulation of electrical sales. The

manufacturer's representative for one of the types of the washing machines displayed reported sales aggregating over \$20,000 during the month the display lasted. The demand for lighting fixtures of a better grade was also increased directly as a result of the exposition while the central stations reported that sales of ranges were increased and interest in electric air and water heating was stimulated.

The *Western Electric* WASHING MACHINE

Solves Your Servant Problem

SAVES
YOUR TIME
YOUR STRENGTH
YOUR CLOTHES
YOUR LAUNDRY
BILLS



BE SURE
IT'S A
**Western
Electric**
APPLIANCE

For Sale by Dealers

Working along side by side with the men in charge of electrical homes, are the distributors of electrical equipment. The Western Electric Company is at the present time conducting a comprehensive advertising campaign in southern California. The billboard shown is one of fifty-six erected to increase the sales of electrical appliances to home owners, that these may be made as nearly electrical homes as possible.

INDUSTRIAL NEWS



Moffat Tunnel Law Is Upheld by Colorado Supreme Court

By a ruling of the Supreme Court of the State of Colorado, in which all seven judges concurred, the law passed by the legislature of the state, providing for the construction of the Moffat Tunnel, has been held valid. Persons who have been objecting to the apportionment of the sum of approximately \$7,000,000 for the work, claiming that the law was unconstitutional, have been defeated and the sale of bonds will be started in the near future.

Under the provisions of the law, a tunnel commission is to be formed which will supervise the selling of bonds, boring of the tunnel and the general management of it. The tunnel itself will be about 6 miles long and will be at an elevation of nearly 9,000 ft. A railroad to connect the western portal of the tunnel with the Denver and Rio Grande at Dotsero will also be constructed. For the use of the tunnel the railroad will pay the tunnel commission a rental to be fixed by the commission.

The tunnel will connect the two halves of the State of Colorado, which are now separated by the Continental Divide. Estimates are that the distance between Salt Lake City, Utah, and Denver, Colo., will be lessened 55 miles over the Union Pacific System and the route of the Denver & Rio Grande will be shortened 172 miles. A rich mineral and agricultural district will be opened by the new tunnel and its connecting railroad.

New York Syndicate Makes Bid for Canadian Railway

Vernon Lloyd Owen, representing a New York syndicate, has been negotiating with the Provincial Government of British Columbia, with a view to the syndicate taking over and operating the Pacific Great Eastern Railway. It is proposed that the Provincial Government should have 25 per cent in the stock of the company, which is to be called the Peace River Corporation, and that the syndicate shall take over the bond issue for the amount already paid in actual construction and shall spend \$30,000,000 in carrying the line into the heart of the Peace River region.

A number of prominent New York financiers, it is stated, including Otto H. Kahn, J. D. Ryan, C. A. Stone, Percy Rockefeller, and Frank Vanderlip are interested in the syndicate, and are prepared to underwrite the bonds, if the British Government will guarantee 6 per cent interest for ten years and the Provincial Government for a fur-

ther ten years; the total bond issue to be \$100,000,000.

The Pacific Great Eastern Railway has been completed from Squamish, at the head of Howe Sound, to Quesnel, in the heart of the Cariboo country. It is owned and operated by the Province, and up to now has been somewhat of a white elephant. It may be said to begin and end nowhere.

The original idea was to run a ferry service from Squamish to Vancouver and possibly Victoria in connection with the railway, and until this is done and the line is completed to Prince George, where it will connect with the Canadian National system, it cannot hope to be successful.

At the present time the interest on the bond issue and operating expenses are costing the Province between two and three million dollars annually. In the spring of this year, at the request of the Provincial Government, J. G. Sullivan, formerly chief constructing engineer for the Canadian Pacific Railway, made an investigation of the line, and his recommendation amounted to abandoning the line and salvaging as much as possible.

San Francisco Engineer Invents X-ray Measuring Device

An "X-ray clock," which its inventor claims will automatically measure and dispense any desired degree of intensity in X-rays, was recently demonstrated before a group of physicians in the laboratories of the St. Francis Hospital in San Francisco. The inventor, Frank Reiber, is a San Francisco electrical engineer and Roentgen ray expert. The "X-ray clock" is the third of a set that he has created and will, he claims, cure cancer.

In the recent demonstration, radium emanations were first turned upon the sensitive clock and the degree of intensity was gradually increased until the rays were so powerful that they would have withered human flesh. The clock measured the amount of the dosage that was being given off by the X-ray machine that it was attached to.

The Great Northern Utilities Company of Great Falls, Mont., has recently filed articles of incorporation with the secretary of state of Montana. This company is organized for the purpose of supplying power and other electric service in the state. Capital stock to the amount of \$3,000,000 is provided for in the articles of incorporation. The directors of the new corporation are: F. D. Fletcher, J. F. Mooney and O. C. Allan, all of Great Falls.

Portland Company Plans Plant and Line Extensions

It is reported that the Pacific Power & Light Company of Portland, Ore., has determined upon hydroelectric high power line extensions in its territory to cost about \$6,500,000. Included is to be a hydroelectric plant to be erected at the reclamation power site on the Deschutes River fifteen miles from the mouth, where 10,000 hp. will be developed.

Sixty miles of high tension line will be constructed this winter from Kennewick across the lower Horse Heaven district and during the following summer extensions will be continued to the new power site. Eighty-five miles of further extensions will be constructed during the summer from the reclamation site to the new plant of the Portland Railway Light & Power Company at Oak Grove. The transmission lines will cost \$1,500,000 and are to link the electric service of the Montana Power Company and the Puget Sound Power & Light Company with an aggregate capacity of 900,000 hp.

The Pacific Power & Light Company has applied to the federal power commission for preliminary permits for ten sites on the Snake River between Homestead and Lewiston. This is reported by W. G. Hoyt, hydraulic engineer of the U. S. Geological Survey.

Power Petitions Pending Before Federal Commission

Eight power applications for the development of 1,581,865 hp. are at the present time pending before the Federal Power Commission at Washington, D. C., according to the annual report of the commission published recently.

Most of the permits are for sites on the tributaries of the Colorado River and action on them has been deferred until definite action concerning the Colorado River Commission findings can be taken. There have been before the commission fifteen applications involving plans with an installed capacity of 209,160 hp., in Idaho, and in Wyoming four applications calling for the development of 4,710 hp.

Expenditures amounting to \$1,000,000 will be made by the Portland Gas & Coke Company for immediate improvements and additions to its properties, according to official announcements. The growth of Portland and its suburbs makes it necessary to plan for large facilities for distributing gas and for additional holder equipment costing \$650,000 and about \$300,000 will be required for more gas producing facilities.

Electrical Supply Jobbers Meet At Coronado

The regular quarterly meeting of the Pacific Division, Electrical Supply Jobbers' Association, was held at the Hotel Coronado, Coronado Beach, Calif., Dec. 7, 8 and 9. At the open meeting held Saturday morning, S. M. Kennedy, vice-president in charge of public relations and service, of the Southern California Edison Company, spoke on "Electrical Business Development for 1923." He said that his company expects to bring in 125,000 hp. of additional energy in 1923. The sale of this power in the districts served directly by the company, means that there will be about 30,000 new residential consumers added and approximately 57,000 hp. added in motor load. He estimates that 30,000 new residential customers will spend \$15,000,000 for ranges, water heaters, appliances, wiring, meters, services and distribution lines. Of this amount, \$6,000,000 will be for labor and \$9,000,000 for material. Motors and wiring will represent an expenditure of \$1,140,000. The jobbers and dealers are very much interested in the \$18,000,000 of the total of \$30,000,000 which will be spent for materials and supplies by the customers and the company itself in carrying out this program. His estimates show that the company must sell 1,500 ranges and 500 water heaters, representing an investment by the consumers of \$400,000. So far as the sale of the ranges and water heaters is concerned he feels that an accepted policy is necessary. These will be sold largely through the contractor-dealers, but the company will assist in the financing of the sale and the installation where necessary. The arrangements will be such that the dealer can buy ranges and water heaters and make the same profit that the company will make on direct sales to the customer. Sixty additional salesmen have already been put out in the field to carry out this sales program. Quotas will be assigned to each district and prizes given to those districts that exceed their quota for the first seven months.

A. W. Childs, commercial manager of the Southern California Edison Company, outlined the range and water heater campaign in greater detail. He feels that the sale of appliances can be handled by the contractor-dealers, but that owing to the inability of the dealer to finance range and water heater sales the company will have to get behind this campaign to carry it out successfully.

W. S. Berry, sales manager of the Western Electric Company at San Francisco, spoke on the work of the "Society for Electrical Development." He said that he has been thoroughly sold on the idea and spoke in order to arouse more interest among the jobbers, manufacturers and central station men who were present. He explained that there is not more interest on the Coast because the work in this section has been largely sectional. He told of the corps of experts at work in the general office of the society, the 100 newspaper advertisements, the publication of magazine articles, the work with the Underwriters for better fire protection, the papers on opportunities for doing business, the studies of different electrical

leagues throughout the country, the many bulletins issued, etc. He feels from his many talks on the Coast that the central station people are looking at the matter more kindly, and he has hopes for future increase of membership in that field.

Several meetings of the Advisory Committee of the California Cooperative Campaign were held during the three days of the jobbers' meeting. On Wednesday, Dec. 6, the committee entertained as guests, representatives of the San Diego Consolidated Gas & Electric Company, and a number of representative electrical concerns of San Diego, at a luncheon conference to discuss plans for furthering the campaign to electrify every household in California. Robert L. Eltringham, manager of the cooperative campaign, in discussing the work of the campaign stated that through greater appropriations which have been asked for to carry on the work in 1923, it is planned to direct the work along two major lines, i. e., education within the industry, and educating the public. The electrical industry itself is not thoroughly sold on the merits of some of the electrical appliances, and before we can expect to sell the public we must sell ourselves. Ten illuminated billboards will be erected along the main arteries of travel of the state to tell the message 24 hours a day. Ten electrical homes are planned for the year; five in the north and five in the south. These homes will be in charge of the campaign's own high-class demonstrators. At the beginning of 1922 there was being installed an average of two convenience outlets to each new home erected, now the average is one and a quarter to each room. Charts are being prepared to show what each convenience outlet means to the four branches of the industry. This will be expressed in terms of the increased kilowatt-hours used and the value in dollars and cents of the additional wiring and appliances sold. It is also planned to lay stress on the campaign for better store and window lighting. A portable window lighting exhibit is being made up which will be moved from place to place for giving demonstrations. Investigations indicate that there are possibilities in this field little realized by those in the industry.

The Los Angeles members of the entertainment committee arranged for a trip to Tiajuana, Mexico, for Friday afternoon. The horse races in the afternoon provided excitement for everyone and in the evening a banquet was served at the Casino. On Saturday afternoon the golf tournament was played off, the winners being as follows: A. W. Childs, commercial manager, Southern California Edison Company, Central Station Cup and Deming Trophy; B. E. Rowley, district manager, Edison Electric Appliance Company, Salt Lake City, Turner Trophy; W. S. Berry, district sales manager, Western Electric Company, San Francisco, Jobbers' Copper Cup.

On a stock merger to become effective Jan. 1, 1923, the Washington Water Power Company of Spokane, Wash., is to acquire the Okanogan Valley Power Company. The Okanogan company operates two hydroelectric plants and owns 100 miles of transmission line.

Olympia Power Company Installs Worthington Turbines

The Olympia Light & Power Company, of Olympia, Wash., has just completed the installation of two new Worthington water turbines of 800 hp. each. These machines will operate at 514 r.p.m. and have complete equipment including Worthington 5,000-ft.-lb. oil pressure governors. These machines will replace the Victor turbines which were installed in 1903.

An order has already been placed with the Westinghouse Electric & Manufacturing Company for a 750-kva. revolving field a.c. generator for direct connection with the new turbine. This generator is to be of the 24,000-volt, 3-phase, 60-cycle type and will be equipped with a direct-connected exciter. A second unit for the other wheel will be considered later.

A 24-kva. series transformer outfit for seventy-eight Westinghouse-Cutter series street lamps for the City of Olympia, has also been ordered from the Westinghouse company.

Public Utility Rate Contracts Discussed by Commission

The California State Railroad Commission recently issued a statement in explanation of its policy of fixing uniform rates for all public utility consumers in disregard of special and preferential contracts. The commission's statement is that a public utility company cannot maintain special rate contracts with consumers as against the superior rate making power of the state. The statement holds such contracts valid only between companies which are not public utilities.

The commission's statement was issued in view of two recent decisions of the Supreme Court, one sustaining and the other reversing the commission in setting aside preferential contracts. In the one case the court held that the company was not a public utility and hence the commission did not have power over its contracts; in the other case the court upheld the commission's ruling that the company was a public utility and sustained the commission in disregarding contracts affecting rates.

Request Permit for Electric Railway in Southwest

An application has recently been made to the Interstate Commerce Commission by the Colorado, Columbus & Mexico Railroad for a certificate to construct an electric line from Farmington San Juan County, N. M., to Columbus, on the Mexican border, 400 miles through western New Mexico, with branches into Arizona and toward El Paso.

The company was incorporated in 1905 by A. O. Bailey, J. G. Hilzinger, W. R. Merrill, A. J. Clark and B. Y. McKeys. A short time ago the Interstate Commerce Commission was requested to give the company permission to put \$20,000,000 worth of bonds on the market.

No statement as to where the company plans to obtain its electrical power is contained in the application for the certificate. An attempt might be made to harness the Colorado River to secure the necessary energy.



Architect's drawing of proposed Pacific Gas & Electric Company's Building, with Matson Navigation Building at the left

Pacific Gas & Electric Company to Erect New Building

A new 17-story office building to be used for the housing of the general offices of the company is to be erected in the near future by the Pacific Gas & Electric Company on the southeast corner of Market and Beale streets in San Francisco. This building is to be a Class A building throughout and will cost in the neighborhood of \$1,500,000. The structure is to stand on the west half of the block between Beale and Main streets, the other 50-vara lot on the Main street corner to be occupied by the 16-story building of the Matson Navigation Company, which is now under construction. The two structures combined, will present one of the most striking blocks in the city.

Architecturally, the design is a new treatment of the problem in a simple, dignified and monumental manner. The first story arcade with its central arch, the plain and simple shaft and the colonnade at the top, are the features of the exterior. The windows are so grouped as to carry vertical lines from the base to the cornice, these lines being accentuated by the colonnade and the broken cornice.

The entire site will be covered by the first floor, which will be devoted to those departments having most fre-

quent and intimate contact with the public, and to an auditorium for general assembly purposes seating 500 people. The main entrance lobby will be a distinct architectural feature giving ready access to the elevators, the assembly hall, and the departmental offices on either hand.

Steel, concrete and brick will be employed throughout the building, except for the exterior which will be of terra cotta, with a granite base. Marble will be used extensively on the first floor and marble tile in the upstairs corridors. Provision is to be made on the sixteenth floor for a general employees' lunch room. Employees' activities are provided for, in the way of a library, rest rooms and conference rooms. The elevator machinery, tanks and other necessary mechanical equipment are placed in the attic story, so that the roof will not be disfigured by pent houses and other unsightly structures.

The mechanical installation for the building will be thoroughly modern. Forced ventilation will be adopted for the lower stories, to prevent noise and dust entering through open windows on the street fronts. Investigations are being made as to the adaptability of alternating current elevators, in which remarkable field advance has been made in the past few years. A battery of six high speed cages will be required

for adequate service. One of the more novel features of the design is the provision of a parking space for automobiles in the basement, access to which is obtained by way of a ramp descending from Beale street.

The structure will house the general offices of the company, which are now scattered among five buildings in all parts of the city, the entire 120,000 sq. ft. of effective area being necessary for the purpose. The San Francisco district offices will doubtless be retained in their present location on Sutter street, but all departments of a general nature operating throughout the system will be concentrated at the new site.

The architectural design is by Bakewell and Brown, architects, of San Francisco, who have associated with them C. H. Snyder, consulting structural engineer, and Hunter & Hudson, consulting mechanical engineers. The company is being represented in the arrangements through its department of engineering, of which A. H. Markwart is the vice-president in charge.

Automatic Substation Will Be Erected in Vancouver

A new automatic substation, to cost \$65,000, will be built in the near future by the British Columbia Electric Railway Company on Bodwell Road in South Vancouver, B. C. So far as is known this will be the first automatic substation in Canada.

The new substation will be used to feed the Main Street, Fraser Avenue and Victoria Road lines, which are now served by the Main Street and Earls Road substations. A rotary converter of 1,000-kw. capacity and transformers to step the current down from 34,000 volts will be installed.

When completed, the new station will improve the service on the street car lines in South Vancouver as in the past voltage has been low on the lines due to distance from substations. It is the purpose of the railway company to complete the station within six months.

Bibliography of Colorado River Has Been Completed

A complete bibliography of the Colorado River and its tributaries has recently been prepared by the Riverside Public Library. This bibliography is a compilation of books, magazine articles and government documents in the library and has been prepared by Miss Bertha Walsworth, under the direction of Chas. M. Woods, librarian.

The problem of the development of the Colorado River is of supreme interest in the West and will continue until full economic development is completed. As the bibliography is newly finished, it contains the latest information on the subject.

According to its secretary, Clancy M. Lewis, the Manufacturers' Association of Washington will expend about \$1,000,000 during 1923 in the establishment of a pulp and paper mill at Tumwater, Wash., near Olympia, on the site of a dismantled brewery which will become a part of the new mill. The West Coast Pulp & Paper Company, organized by the Hawley Pulp & Paper Company interests at Oregon City, will erect and operate the plant.

May Start Work on Rio Grande Project Immediately

Actual construction of a project to cost in the neighborhood of \$1,500,000, planned to develop hydroelectric power at the mouth of White Rock Canyon on the Rio Grande west of Santa Fe, N. M., can be started as soon as the associates of Daniel L. Evans, of Pottstown, Pa., are ready. The application filed with the state engineer of New Mexico by Mr. Evans has been approved and the permit which has been issued states that construction must be completed within a reasonable time.

According to the information furnished Charles A. May, state engineer, the plant is expected to develop 15,000 hp. and to be capable of supplying electricity for commercial use to Santa Fe, Las Vegas and Albuquerque. It is also indicated that there is a possibility of securing enough power to electrify the main line of the Atchison, Topeka & Santa Fe Railroad between Albuquerque and Las Vegas, or at least over the Glorieta grade.

Under the present plans it would be practical to transmit power to towns within a 250-mile radius of the generating plant. The dam proposed is to be at the mouth of the canyon and is to be 140 ft. high.

Oregon Pulp and Paper Mill to Be Enlarged at Once

The Hawley Pulp & Paper Company of Oregon City, Ore., has announced its decision to start at once on the construction of a large addition to its plant located at the falls of the Willamette River. The increase in the plant, which will cost between \$1,500,000 and \$2,000,000, will include the building of an additional paper factory unit 100 x 400 ft., three stories in height, pulp grinding equipment and another sulphite mill. The additions will raise the capacity of the plant from 110 tons to approximately 190 tons every 24 hours, chiefly news print. About 200 additional men will be needed.

Plans for the new addition have been in the course of preparation for several months and as a result there will be little delay in getting started. The machines should be ready for operation in a year's time.

Decision as to whether the Pacific Gas & Electric Company will construct Pit No. 2 or Pit No. 3, next, will not be made until the spring months, according to P. M. Downing, vice-president in charge of electrical construction. Both plants are to be on the Pit River and will be below the Pit No. 1 plant opened Sept. 30. Pit No. 2 project will develop 15,000 kw. and will be located three miles down the stream from the first plant and Pit No. 3, still farther downstream, will have a capacity of 50,000 kw.

The City of Murray, Utah, has applied to the state engineer of Utah for authority to divert 15 sec.-ft. of water from Little Cottonwood creek in Salt Lake County. Two 5-ft. wheels are to be installed, and the horsepower generated is to be about 420. This additional power is proposed to increase the present output of the Murray City municipal electric plant.

Injunction Sought to Prevent Power System Appraisal

A permanent injunction to prevent the City of Los Angeles securing the services of the California State Railroad Commission to obtain an appraisal of its lines has been requested by the Los Angeles Gas & Electric Company, on the grounds that the motion to have this appraisal made did not pass the city council by the required two-thirds majority. At the time the motion was before the council five votes were cast in favor of it and four councilmen were opposed to it.

The purpose of the city is to condemn the system of the power company within the city limits. According to figures of the company the system is worth \$17,000,000, and the city officials state that it is worth only \$7,000,000. The Los Angeles Gas & Electric Company now has many extensions under way and according to a statement by Champ Vance, vice-president of the company, the system will be worth \$20,000,000 within another year.

C. A. Coffin Fund Will Reward Service to Industry

By action of its board of directors, the General Electric Company has set aside a fund of \$400,000 to be known as the Charles A. Coffin Foundation, the income from which, amounting to approximately \$20,000 a year, will be available for encouraging and rewarding service in the electrical field by its employees, for giving recognition to lighting, power and railway companies for improvement in service and for fellowships to graduate students and funds for research work at technical schools and colleges.

The fund has been set aside by the General Electric Company as an appreciation of the work of Charles A. Coffin, who was the founder of the company and its leader for thirty years. Mr. Coffin has been identified with the development of the electrical industry since 1868 and retired from the General Electric Company May 16, of this year.

The committee controlling the fund proposes to distribute the income of the foundation as follows:

(1) Eleven thousand dollars in prizes for the most signal contributions by employees of the General Electric Company toward the increase of its efficiency or progress in the electrical art. Particularly, the prizes are to further encourage suggestions from workmen. With each prize, the company will give a certificate of award. Foremen's prizes are to be awarded for the best department, taking into account its appearance, efficiency of operation, and conditions which add to the better conduct of the work and the welfare of the employees.

(2) A gold medal, to be known as the "Charles A. Coffin Medal," will be awarded annually to the public utility operating company within the United States which, during the year, has made the greatest contribution towards increasing the advantages of the use of electric light and power for the convenience and well-being of the public and the benefit of the industry. The company receiving the medal will also receive \$1,000 for its employees' benefit or similar fund.

A committee to be named by the National Electric Light Association and known as the Charles A. Coffin Prize Committee of the National Electric Light Association, which shall consist of its president, chairman of its public policy committee and a third member nominated by them, will award this medal, acting with the advice and co-operation of a committee appointed by the foundation committee.

(3) A gold medal, to be known as the "Charles A. Coffin Medal," will be awarded annually to the electric railway company within the United States which, during the year, has made the greatest contribution towards increasing the advantages of electric transportation for the convenience and well-being of the public and the benefit of the industry. The company receiving the medal will also receive \$1,000 for its employees' benefit or similar fund.

A committee, formed in the same manner as the preceding one and to be named by the American Electric Railway Association and known as the "Charles A. Coffin Prize Committee of the American Electric Railway Association," will award this medal.

(4) Five thousand dollars is to be awarded annually for fellowships to graduates of American colleges and technical schools, or some portion or all of the fund may be used to further the research work, at any of the colleges or technical schools in the United States. The fields in which these fellowships and funds for research work are to be awarded are electricity, physics and physical chemistry.

In each annual report of the General Electric Company a statement will be made of the awards under the "Charles A. Coffin Foundation," and other publicity will be given to such awards.

The board of directors of the General Electric Company has appointed as the "Charles A. Coffin Foundation Committee" the following officers of the company: A. W. Burchard, J. R. Lovejoy, E. W. Rice, Jr., Gerard Swope and O. D. Young.

Oregon Short Line Will Build Secondary Main Line

The Oregon Short Line railroad through Carl R. Gray, president, has signed a contract with the Chamber of Commerce of Boise to build a secondary main line from Orchard, Idaho, a station on the line about 25 miles east of Boise, into that town to operate through passenger trains over the proposed new route and into Nampa.

The Oregon Short Line agrees to expend \$3,180,550 on building of the railroad and passenger station.

The City of Boise is to deed the right-of-way and raise a trust fund of \$325,000, the interest on which is to be used to pay taxes on the newly constructed line for a period of 25 years.

The Department of Conservation and Development of the State of Washington has issued two permits to appropriate waters of creeks in Stevens County, one to Fred Mitchell for the Inchelium Water Power Company, to install a hydroelectric plant on Stranger Creek. The other permit is issued to Harry L. Lincoln of Metaline, to appropriate waters of Linton Creek.

Concrete Conduit Will be Built in Southern California

A contract which has been under consideration for two or three years has just been completed and has been signed by Escondido Mutual Water Company of Escondido, Calif., and the San Diego County Water Company of San Diego, Calif. The contract deals with the construction and benefits of the Warner dam which will be up to the 110-ft. contour in about two months and will then have a capacity of approximately 164,000 acre-feet.

Under the provisions of the contract an immense concrete conduit will be built, including tunnels, and will utilize the present conduit of the Escondido Mutual Water Company on the San Luis Rey River to the Bear Valley reservoir about 6 miles east and north of Escondido. The new conduit when completed will deliver 45,000,000 gal. of water a day.

The Bear Valley reservoir will be strengthened next year and increased within two or three years. This reservoir will be used as a storage source by the Escondido Mutual Water Company and as a distributing center by the San Diego County Water Company. A power plant is also to be built, according to the terms of the contract, just above the Bear Valley reservoir, and will be owned by both companies. Through the contract thousands of acres in San Diego county, surrounding the town of Escondido, will be irrigated and the wealth of the territory will be greatly enhanced.

Wholesale Power Not to Be Sold by Irrigation District

The Modesto-Turlock Irrigation District directors are opposed to wholesaling electric power to any city or community that may be served when the district installs its transmission lines from the Don Pedro dam. It is the purpose of the directors to retail the power generated at the dam and distributed by the transmission lines now under construction.

The city of Turlock, Calif., has already been refused power at wholesale rates. A recent application of the district asks for a franchise from the county board of supervisors of Merced county, for the erection of a transmission line and distributing system in the county enabling the district to sell electricity outside of the corporate limits of towns in Merced County lying north of the Merced River. The hearing will be held Dec. 22.

Springfield, Ore., Sawmill to Be Completely Electrified

An order was recently placed with the General Electric Company for the electrical equipment of the Wendling sawmill of the Booth Kelly Lumber Company of Springfield, Ore. This mill, which replaces the one destroyed by fire last summer, is to be completely electrified. The contract includes a 300-hp. motor for the band head-saw, one of the same size for the edger and numerous smaller motors, in addition to necessary switchboard and central apparatus.

The Booth Kelly company will install an additional steam turbine to care for

the new mill. The West Coast Engineering Company of Portland has been engaged for the electrical wiring.

First Unit of Copper Company's Mill Being Reopened

After four years' suspension, one section of the Utah Copper Company's Magna, Utah, mill has been placed in operation, with a crew of about 400 men. Construction work is progressing in preparing other sections for operation, and it is expected that activity will gradually increase until all sections, about twelve in number, will soon be operating.

California Cooperative Campaign Announces Xmas Plans

Plans for the launching of a whirlwind campaign in San Francisco and Los Angeles to promote the sale of electrical appliances as Christmas gifts, are being prepared by the California Electrical Cooperative Campaign as the result of a report of the activities of the San Diego Electric Club along similar lines made at the advisory committee meeting of the Campaign at the Hotel Coronado.

The campaign now under way in San Diego, as outlined by A. E. Holloway, superintendent of the commercial department of the San Diego Consolidated Gas & Electric Company, is centered around the slogan "Give Electrical Christmas Gifts." Individual and cooperative advertising is being run daily in the local papers to emphasize this idea. A total of 57 billboards have been utilized to carry the message, while automobile posters and window displays are also being used. One of the most novel features of the campaign is the 5,000 buttons bearing the slogan which have been distributed to the school children. Large replicas of these buttons will be worn by all members of the electrical fraternity.

Editors Guests of Idaho Power Company for Three Days

Reports received from editors of a large number of papers throughout southern Idaho indicate that the trip recently conducted by the Idaho Power Company was one which interested these men greatly. As a result of the trip a healthy feeling of cooperation has been established between the central station company and the press.

Three days were devoted to the trip, which was conducted during the month of November and the power company played the part of the educational host well, according to comments by the editors who made the trip. The start was made from Boise, Idaho, and the first plant to be visited was the Swan Falls station south of the city. The visitors were then guests at the Idaho-Utah football game and on the following morning started for the Malad plant near Mountain Home and then visited the Lower Salmon plant a mile west of Hagerman. The Thousand Springs plant, the one at Shoshone Falls and the American Falls development were also viewed by the editorial guests. After reaching their destination at American Falls the guests were acquainted with the government plans for the \$13,000,000 dam which will water a million and one-half acres.

Books and Bulletins

ADVANCED LABORATORY PRACTICE IN ELECTRICITY AND MAGNETISM

By EARLE MELVIN TERRY, PH. D., Associate Professor of Physics, University of Wisconsin. 6 x 9 in. 261 pages. 131 illustrations. \$3. McGraw-Hill Book Company, Inc., New York.

In a laboratory manual for the use of engineering students, it is quite desirable that the scope of the experiments be extended to include the newer branches of electrical measurements in addition to the older and better established fields.

The author has compiled in this text the subject matter of such a course as given to the students in electrical engineering in one of our large universities and has combined the fundamentals of the old and the new in a very satisfactory manner. The system of preceding an experiment by a discussion of the theories involved and its relation to the other experiments in the same field is followed throughout. In addition, care has been taken to describe the equipment to be used and to explain the manner of making a measurement before it is attempted by the student.

The subject of elementary transient phenomena and its relation to complex bridge methods for the precise measurement of inductance and capacity is treated at length. Because of the multiplicity of its uses, the electron tube has many applications in the general research laboratory and in engineering work, besides its usefulness in the way of radio communication, therefore the author has devoted considerable space to this device. The interesting subject of the conduction of electricity through gases is well explained, and sufficient experiments in this advanced branch of physics are outlined to give the student a good working knowledge of the fundamentals.

The author has made use of mathematics wherever it is necessary to show the method of developing a formula concerning a particular experiment to be made.

This text is well adapted to the use of electrical engineering students taking the necessary advanced course in measurements in electricity and magnetism.

E. R. S.

Six Place Tables

132 pages, 4 by 6 1/4 in. \$1.25. McGraw-Hill Book Company, Inc., New York.

This is a compact, flexible volume containing a selection of tables of squares, cubes, square roots, cube roots, fifth roots and powers, circumferences and areas of circles, logarithms of numbers, logarithms of the trigonometric functions and the natural trigonometric functions. The tables are those most commonly needed by engineers and engineering students and the book should prove of great value because of compactness and the handy arrangement of the tables.

Meetings

Seattle Club Holds Banquet on Board Coastwise Vessel

Approximately 200 people, all directly or indirectly interested in the electrical industry in Seattle, Wash., were the guests of the Electric Club of Seattle at a banquet given aboard the S. S. H. F. Alexander on the evening of Nov. 27. The Admiral line vessel was moored to a pier in the harbor and the electrical men and their wives had no trouble in getting aboard.

Every chair in the dining salon of the vessel was occupied when the banquet was started and some of the late-comers were forced to participate only in the dancing and card party which followed the meal. All branches of the electrical industry in the Puget Sound city were well represented and guests remarked that it was one of the most successful events of its kind that has ever been held.

W. E. Jones, president of the club, presided at the banquet and was assisted by an entertainment committee composed of R. M. Coe, F. A. Block, Harry Martin, Charles Smutz and B. R. Stare.

Denver League Aids Christmas Advertising Campaigns

A Christmas advertising campaign, somewhat smaller than that launched last year, is being conducted by the Electrical Cooperative League in Denver. An appropriation has been made, it is said, for advertisements appearing every day in the principal newspapers throughout the month of December up until Christmas. Special page spreads, in cooperation with the various electrical dealers, are being featured weekly.

The slogan, "Make This an Electrical Christmas," introduced last year, is again being used to good advantage. Advertising copy is being prepared by S. W. Bishop, executive manager of the League, assisted by Frank J. McEniry, the newly appointed field representative of that organization, who formerly was connected with the Denver newspapers.

A Ladies' Meeting was recently held by the Denver section of the American Institute of Electrical Engineers to which members of the organization and members of the constituent bodies of the Colorado Engineering Council and their wives were invited. During the evening a demonstration of telephone equipment was presented and a moving picture entitled "Behind Your Telephone" was also shown to the visitors.

The Delta Electric & Water Company withdrew its application for a permit to set poles and string wires in Everett, Wash., when it became evident that the permit sought would have to be granted as a franchise, with franchise requirements of two per cent of gross earnings payment to the city.

Supply Jobbers Make Plans to Stabilize Industry

Steps toward stabilizing the electrical appliance business, and increasing its volume, were taken at the semi-annual convention of the Electrical Supply Jobbers' Association, held at the Hotel Cleveland, Cleveland, Ohio, Nov. 20-24. Out of town registration totaled 368.

Methods of helping the retail dealer to better fulfill his function in the chain of distribution was one of the outstanding subjects discussed. The necessity of increasing the number of regular dealers to adequately supply the public was also discussed, and suggestions were made that the spread between the wholesale and retail prices of electrical appliances at present is not adequate to properly support the selling organization necessary to cover this field.

In order to improve the standard and give proper encouragement to retail electrical stores a spread of 50 per cent instead of the present 37 per cent, was urged by John H. Gilchrist, vice-president of the Commonwealth Edison Company of Chicago.

The jobber should actively support the high grade dealer and discourage the low grade dealer for the benefit of the industry as a whole, according to W. R. Herstein, vice-president of the Electric Supply Company, of Memphis, Tenn.

Jobbers' salesmen have a primary function in promoting cooperative electrical leagues throughout the country for the purpose of putting over the "Electrify America" and "Do It Electrically" campaigns, W. E. Robertson, general manager of the Robertson-Cata-ract Electric Company, of Buffalo, N. Y., said. Jobbers should cooperate actively with every other branch of the industry in this work.

The convention unanimously passed a resolution that a committee of three be appointed to investigate and make recommendations for placing the retail market in the electrical field on as profitable a basis as those existing in other fields.

COMING EVENTS

National Council of Lighting Fixture Manufacturers—

Annual Convention—Cleveland, Ohio
Jan. 15-20, 1923

Lighting Fixture Dealers Society of America—

Annual Convention—Cleveland, Ohio
Jan. 15-20, 1923

American Institute of Electrical Engineers—

Midwinter Convention—New York, N. Y.
Feb. 14-16, 1923

Contractor-dealers in Denver, Colo., through their association, staged a smoker the night of Dec. 11. A number of boxing bouts and wrestling matches, along with some vaudeville acts, made up the program. It was held in the auditorium of the Denver Tramway Company under the direction of J. W. Hancock, an active member of the association, and Alex Hibbard, secretary of that organization.

Radio Equipment Standardization Purpose of Conference

The Bureau of Standards of the Department of Commerce has called a conference on radio standardization to be held on Jan. 12, in New York City. The desirability of calling a general conference on radio standardization has been apparent in many ways, and this call is issued by the Bureau of Standards at the specific request of the following associations and organizations: Institute of Radio Engineers, National Radio Chamber of Commerce, Radio Apparatus Section, Associated Manufacturers of Electrical Supplies, National Retail and Dry Goods Association, American Radio Relay League, and the Radio Corporation of America. These organizations have pointed out that there is need for greater uniformity in the methods of describing, rating, and testing the performance of radio apparatus.

Invitations are being issued to all of the national associations of an engineering and technical nature which are known to be interested in radio standardization. The representation of radio manufacturers will in general be through the trade associations of which they are members. While it is desired to make the conference thoroughly and broadly representative, it is expected that the organizations invited will limit their representation to one or two persons in order that the conference may be as effective as possible.

The purpose of the conference is to consider broadly (1) whether a formulation of standards for radio apparatus and service shall be made, (2) if so, what general classes of apparatus or service should be included, and (3) what procedure shall be recommended for carrying out the conclusions reached by the conference. If the conference decides that radio standards should be formulated, it is expected that they will be prepared with special consideration of the wide range of interests which are concerned with the subject, and that these standards may ultimately be adopted with the approval of the American Engineering Standards Committee as an American Standard.

Executive Committee Light and Power Association Meets

A meeting of the executive committee of the technical section of the Northwest Electric Light and Power Association was called to order by Chairman R. M. Boykin, on Dec. 5, in the offices of J. B. Fiskens, engineer with the Washington Water Power Company, at Spokane, Wash. The meeting was characterized by two days of solid work, those present forming a single group, and much helpful discussion resulted.

The following heads of committees were present: R. E. Thatcher, meters; J. B. Fiskens, hydraulic power; H. H. Schoolfield, safety rules; and R. R. Robley, apparatus.

Several committee chairmen were unable to attend because of other important business. Their work was cared for by other members of the executive committee. The chairmen unable to be at the meeting were: H. R. Wakeman, underground; F. J. Rankin, overhead; O. L. Lefever, prime movers; and G. E. Quinan, inductive co-ordination.

Personals

Warren Stoutner, member of the Public Utilities Commission of Utah, has returned to Salt Lake City from the recent convention of the National Association of Railway and Utility Commissioners, held at Detroit. Mr. Stoutner is chairman of the accounting committee of the national association. The report of his committee, on the subject of a uniform system of accounting for the various classes of utilities in several states, was one of the important matters discussed at the convention. He reports that Salt Lake City is very likely to get the 1924 convention of the national association.

A. N. McL. Robertson, of Punjab, India, with the Indian Service of the British empire, spent a few days in Salt Lake City during the latter part of November, studying irrigation works, methods and construction as applied to irrigation.

J. S. Desmond, petroleum chemist, U. S. Bureau of Mines, with headquarters at the San Francisco office of the Bureau, is at Pittsburgh, Penn., where he will remain several weeks gathering data in connection with cracking experiments being carried on by the Bureau.

Harry L. Garbutt has been appointed merchandising manager for the San Francisco office of the Westinghouse Electric & Manufacturing Company. Mr. Garbutt came to San Francisco in 1919 to become district supply manager for the Westinghouse company. Born at Port Huron, Mich., in 1879, Mr. Garbutt entered the electrical field at seventeen and for twelve years was en-



HARRY L. GARBUTT

gaged in overhead construction work in various middle western states. In 1908 he joined the organization of the Drew Electric & Manufacturing Company of Indianapolis where he remained as sales manager until becoming line material specialist with the Westinghouse company late in 1909. In 1913 he became manager of the line material section at East Pittsburgh, then six years later supply manager for the San Francisco territory, from which position he has recently been made manager of the newly organized merchandising division in the San Francisco office.

Douglas Betts, chief engineer of Messrs. Debenhams, Ltd., electrical engineers of London, England, is a recent Pacific Coast visitor. Mr. Betts, who is a member of the American Institute of Electrical Engineers, is touring the United States for the purpose of investigating recent hydroelectric developments.

W. M. Deming, president of the Atlantic Pacific Radio Supply Company of San Francisco, has recently returned from a short eastern business trip.

H. G. Weeks, of the H. G. Weeks Manufacturing Company, Hamilton, Ohio, is a recent Pacific Coast visitor.

R. B. Williamson, electrical engineer of Milwaukee, recently spent several days in San Francisco, while investigating power development in California.

W. H. Dow of the Northern States Power Company, Minneapolis, Minn., is a recent San Francisco visitor.

G. E. Emmons, vice-president of the General Electric Company, Schenectady, N. Y., is making a tour of the Pacific Coast at the present time.

H. Noel Pike of the industrial sales department of the Los Angeles office, Westinghouse Electric & Manufacturing Company, has just recently been transferred to the sales department of the Tucson office of that company.

F. C. Conrad, Pacific Coast representative of the Square D Company, from San Francisco, has been in Los Angeles in the interests of his firm.

E. P. Markee, district manager, Edison Lamp Works, Los Angeles, recently visited San Francisco in the interests of his company.

David Hays, assistant manager of the wiring device division of the General Electric Company, Bridgeport, Conn., is in Los Angeles, after visiting various points on the Pacific Coast, and will remain until after the Jobbers' Convention at Coronado.

W. E. Creed, president of the Pacific Gas & Electric Company, is in the East on a short business trip.

C. B. Merrick, formerly in the inspection department of the San Joaquin Light & Power Corporation, has been placed in charge of the range department of the Valley Electrical Supply Company of Fresno.

S. T. Dodd, engineer for the General Electric Company, was the chief speaker at one of the dinners held in conjunction with the fall convention of the Association of Chinese and American Engineers in Peking. Mr. Dodd spoke on "The Electrification of Railways."

F. S. Mills has been appointed representative of the Illuminating Engineering Society in Los Angeles. Mr. Mills has recently been made director of the activities of the National X-Ray Reflector Company in the territory from Denver west, including the Hawaiian Islands.

J. G. McCollom of the Intermountain Electric Company, and J. C. Painter of the Capital Electric Company, recently staged a radio program before the Salt Lake section of the American Institute of Electrical Engineers.

J. A. Kahn, president of the Capitol Electric Company, jobbers of Salt Lake City, has been in Los Angeles for a few days, prior to his departure for the Pacific Coast Jobbers' Association convention at Coronado.

LeRoy M. Pharis, who for the past several years has been assistant to the chief engineer of the Utah Power & Light Company, has recently become associated with the Great Northern Power Company, with headquarters at Duluth, Minn. Mr. Pharis was graduated as an electrical engineer from Syracuse University in 1907. In that same year, immediately after his gradu-



LEROY M. PHARIS

ation, he became associated with the Telluride Power Company. He was actively connected with the early hydroelectric developments of that company in Utah, Idaho and Colorado. When the Utah Power & Light Company was organized, in 1912, he became a member of that organization, as a hydraulic engineer, and devoted considerable of his time in connection with the company's Grace, Idaho, hydroelectric development. He has served in the capacity of assistant to the chief engineer for the past five years. Mr. Pharis' new duties will consist of investigating and developing hydroelectric possibilities with the Great Northern Power Company.

Clark Grove of New York, treasurer of the Mine & Smelter Supply Company of Denver, recently spent several days in that city conferring with executives of the company.

Tracy E. Bibbins, president, and Dave E. Harris, vice-president and sales manager, both of Pacific States Electric Company, San Francisco, attended the jobbers' convention at Coronado.

K. E. Van Kuran, district manager, Westinghouse Electric & Manufacturing Company, Percy H. Booth, district manager, Edison Electric Appliance Company, H. H. Walker, electrical contractor, W. L. Frost, manager, commercial department, Southern California Edison Company, of Los Angeles, and George Bigelow of Riverside, members of the Advisory Committee, California Electrical Cooperative Campaign, recently left for Coronado where they attended the meeting of the Advisory Committee of the Campaign and also attended the Pacific Coast Jobbers' Association convention.

Harry E. Koenig has been appointed lighting fixture specialist for the Illinois Electric Company. Mr. Koenig has been with the National X-Ray Reflector Company of Chicago for the past eleven years and has been in the fixture business during his entire business career.

W. C. Chappell, noted English hydro-electric engineer, recently visited San Francisco en route from Australia to the East. Mr. Chappell is known in Australasia as the man who gave Tasmania its first electric lights and street cars. He supervised the construction of a 57,000-hp. hydro plant near Hobart, Tasmania, and later, as chief electrical engineer of the state electrical commission of Victoria, he was in charge of the erection of a steam plant at Melbourne.

H. W. Hitchcock, of the Pacific Telephone & Telegraph Company, read a highly interesting paper on "Carrier Current Telephone and Telegraph Systems" before a recent meeting of the San Francisco section of the American Institute of Electrical Engineers.

G. E. Kimball, electrical engineer for the California State Railroad Commission, will represent California on the committee on lighting legislation of the Illuminating Engineering Society of America.

W. C. Sterne of the Summit County (Colo.) Power Company, was re-elected chairman, E. A. Phinney of the Jefferson County (Colo.) Power & Light Company, vice-chairman, and V. L. Board, general superintendent of the Denver Gas & Electric Light Company, secretary and treasurer of the Rocky Mountain Committee on Public Utility Information for the new year, at the committee meeting Nov. 25. George E. Lewis was re-appointed executive manager.

Paul B. Wilson has been promoted to the post of district manager of the San Joaquin Light & Power Corporation at Fresno, Calif., to succeed A. M. Frost, who has been made sales manager of the company. Mr. Wilson was formerly district manager at Madera, having held that post since December, 1913. During that time his district has



PAUL B. WILSON

been the center of a tremendous agricultural growth in which the central station has played an important part. Mr. Wilson began his career with the company in August, 1909, as a counter man. In August, 1913, he was promoted to the position of district manager at Paso Robles and in December of the same year he was transferred to Madera.

H. B. Cannon, formerly agent of the San Joaquin division of the Pacific Gas & Electric Company at Newman, Calif., has been made electrical superintendent on the North Bay division with headquarters at Vallejo.

John S. Elliott, manager of the Coto-Coil Company of Providence, R. I., is a recent Pacific Coast visitor. Mr. Elliott is making a survey of the western market with a view of opening channels of distribution for his products in the West.

J. H. Anderton, member of the firm of Thebo, Starr and Anderton, San Francisco consulting engineers, recently gave an address before the Foreign Trade Club of San Francisco on the subject of industrial and electrical development in Japan. Mr. Anderton recently returned from Japan where his firm is engaged in supervising the development of several hydroelectric projects.

Herbert C. Hoover, Secretary of Commerce and chairman of the Colorado River Commission, spent several days at his home in Palo Alto, Calif., following the conclusion of the meetings of the commission at Santa Fe, N. M. During his stay Secretary Hoover delivered two addresses on the Colorado River, one before the San Francisco Chamber of Commerce and the other before the Commonwealth Club of the same city.

B. Y. Gibson, Pacific Coast representative of the Walker-Pratt Manufacturing Company, manufacturers of Western Electric-Crawford ranges, of San Francisco, is in Los Angeles for a considerable stay, going over the local territory with the Western Electric Company's representatives.

Floyd Averill, of the Fobes Supply Company of Portland, spent a few days in Los Angeles and San Francisco en route to the Jobbers' Convention at Coronado.

Ray F. Robinson, of the Robinson Sales Company of Seattle, was a recent business visitor in San Francisco. Mr. Robinson's firm is the representative in the Northwest for some of the most well known electrical manufacturers.

H. D. Randall, district manager of the General Electric Company in Denver, addressed the Rocky Mountain alumni association of the Delta Upsilon fraternity at its monthly meeting in Denver, Nov. 25.

John J. Cooper, chairman of the Electrical Cooperative League in Denver, has appointed as chairmen of the various standing committees of that organization: George O. Hodgson, district manager of the Edison Lamp Works, membership; Clarence Keeler, entertainment; F. F. McCammon, program; and R. G. Gentry, finance. Each of the last three named is connected with the Denver Gas & Electric Light Company.

F. F. McCammon of the Denver Gas & Electric Light Company, and D. D. Sturgeon, an active contractor-dealer, have been appointed to represent the electrical industry through the Electrical Cooperative League of Denver on the committee arranging for a pageant of progress to be staged in Denver some time this summer, as part of the "500,000 in 1930" campaign, sponsored by the real estate bureau of the Denver Civic and Commercial Association.

Frank J. McEniry, a prominent Denver newspaper man, has been appointed the field representative of the Electrical Cooperative League in that city. As one of the first steps in its new campaign of intensive business development, the League has secured Mr. McEniry's services and because of his



FRANK J. MCENIRY

close contact with the electrical industry and his wide acquaintance, the League members feel, it is said, that the personal service idea of the organization will be greatly accelerated. Mr. McEniry is a graduate of the University of Denver and served overseas during the war as an officer in the Quartermaster Corps. He is vice-president of the Denver Press Club.

H. T. Plumb, district manager for the General Electric Company at Ogden, Utah, addressed a meeting of the Rotary Club in that city recently. Mr. Plumb's talk dealt with the history and development of radio and explained the principle upon which radio functions.

Obituary

Alfred E. Bent, one of the pioneers of electrical development in Colorado and New Mexico, died at his home in Denver, Nov. 28, after a brief illness. He established several central station properties in the Askansas Valley of Colorado and his son, Donald E. Bent, president of the New Mexico Utilities Association, is the head of the Tucumcari Light & Power Company, another plant established by his father. Mr. Bent at the time of his death was 66 years old. He became a resident of Colorado in 1886 and took an active part in state politics from 1905 to 1909, during which time he served as state auditor and state treasurer. He made his residence in Denver after his retirement from politics.

H. E. Corbet, manager of the Los Angeles Service Station of the Edison Appliance Company for the past seven years, died on Thursday, Nov. 30, 1922. Mr. Corbet was one of the most valued employees of that company and was very active in local electrical circles and his passing was marked with regret by all electrical men in this section.

Manufacturer, Dealer and Jobber Activities

The Electrical Material Company, with offices in San Francisco, Seattle, and Los Angeles, has recently been appointed the agent of the Roller-Smith Company in Washington and parts of Oregon and Idaho. The distributing company has recently opened offices in the Hinckley Building in Seattle and has placed R. F. Robinson in charge of this office. This company now has the agency for the Roller-Smith products all over the Pacific Coast region.

The Edison Electric Appliance Company has just perfected the new Edison Curling Iron, which it claims will give service far above any curler selling at anything near its price. Its heating unit consists of nickel chromium wire wound on a porcelain tube in which a steel rod has been inserted as a support. The unit is packed in a brass shell with magnesium oxide and cannot be damaged by ordinary falls or knocks. The new curler has an angle opening shield. All parts are heavily nicked and buffed. The handle is of selected wood, properly insulated.

The United Electric Company, of Canton, Ohio, has published and sent to distributors and retailers of its line of Ohio-Tuec electric heaters, a number of suggestions for Christmas windows. A number of attractive window displays are described in the letter.

The C. & S. Electric Company, of Warren, Pa., has recently placed on the market an electric soapstone warmer. This is an old device which is now made to be electrically heated. A heating unit of 3,000 watts is embedded in the soapstone and when heated the warmer will hold the heat for a number of hours. It may be used either in a bed or as a foot warmer during the day, in automobiles, street cars or other places where continuous heat is needed.

The Esterline-Angus Company, of Indianapolis, Ind., manufacturers of graphic meters and permanent magnets, has recently published a new bulletin entitled "How to Make a Plant Survey." This bulletin gives information which will aid the engineer in making a plant survey and in getting records and applying them. Copies may be secured by addressing the manufacturers.

The Goodnow-Gardner Electrical Corporation has filed articles of incorporation in the state of Colorado. The new firm will engage in the general electrical business in Boulder, Colo. The incorporators are L. Goodnow, R. S. Gardner, and C. W. Bell.

The Kauffman-Norton Company, of San Francisco, is now acting as distributor for the Electrogas floor furnace.

The California Wire Company, of Orange, Calif., is at present turning out about a carload of wire a day at its southern California plant. Weather-proof wire is the chief product of the company and it is carrying in stock in San Francisco a supply of about 150,000 lb. of this. Insulating yarn is being made at the California Cordage Company mill which is a subsidiary of the wire company.

The Arthur-Fowler Company, manufacturers of A & F electric water heaters and accessories in Spokane, Wash., has entered into an agreement for the distribution of their entire product by the Washington Electric Supply Company of that city. No change in price of policy is contemplated, A & F goods being sold through regular jobbing channels as before.

The Butte Electric Supply Company, of Butte, Mont., has recently installed a retail department which will operate along side of the distributing organization which has been conducted by the firm for some time. The new department is to feature electric washers, sewing machines, cleaners and popular smaller appliances. Radio supplies will also be handled. Royal MacDonald, formerly of San Francisco, has been placed in charge of the retail department.

Deming & Steel is the firm name under which C. P. Deming and F. A. Steel will engage in the electrical engineering and contracting business at 622 Fourth Avenue, Seattle, the new firm specializing in design, estimating, supervision and installation. Mr. Deming came west 12 years ago to act as representative for Crocker-Wheeler Company and for the past seven years has been Northwest manager of the wire division of U. S. Rubber Company. Mr. Steel was formerly of J. J. Agutter & Company, and for 18 years has been engaged in electrical contracting and engineering business in Seattle.

The Westinghouse Electric & Manufacturing Company has reprinted an article that appeared recently in the technical press, on the "Advantages of Railroad Electrification," by R. J. O'Brien of its heavy traction department. The publication is known as reprint No. 128. In answer to the questions, "Why electrify?" and "What are the advantages of electrification?", statistics and data acquired from actual

operating records on both steam and electric roads serve as a means of comparing the two methods of operation. These statistics touch on fuel consumption, maintenance costs, schedules possible under existing modes of transportation, and other subjects of importance. The feasibility of electric operation in tunnels, on heavy mountain grades, in congested freight yards, or in heavy interurban traffic are also clearly set forth.

The Continental Electric Company has been incorporated in Denver for the purpose of manufacturing and distributing a patented lighting unit. Adolph R. Stein and William E. Quiers are directing the company which has its offices in the Quincy Building. The patented feature of the unit is said to be in the composition of the glass reflector and shade to which has been added Kisselguhr.

The Hendrie & Bolthoff Manufacturing & Supply Company of Denver, through the manager of the electrical department, J. C. Davidson, has taken the lead in conducting a cooperative newspaper advertising campaign for the improvement of radio business in the Rocky Mountain region. Page spreads are appearing in the Denver newspapers weekly.

The Black Electric Company, of Denver, Colo., a closed corporation, has been incorporated in the State of Colorado to manufacture storage batteries on patents originally issued to the Fritchle Electric Company. Charles W. Owens, Samuel M. Palmer, William S. Black, and Frank McDonough, Jr., have incorporated the company for \$10,000. The Denver factory is located at 1544 Clarkson Street.

Charles Bolibaugh, of 1462 Josephine Street, Denver, Colo., is the newest addition to the electrical business in the intermountain city. A license was recently issued to Mr. Bolibaugh, by the city's electrical department.



NEW PORTLAND HOME FOR WESTERN ELECTRIC COMPANY

The new three-story brick and concrete building which has been constructed for the supply department of the Western Electric Company in Portland, Ore. The new home of the department occupies a 50 x 100-ft. lot on the northwest corner of West Park and Flanders Streets. The building was erected especially for the company and will be used by it for office and warehouse purposes.

Trade Outlook

San Francisco

As a result of better conditions in interior towns making up the back country of San Francisco, conditions are considerably better than they were last year. Higher prices are being received for live stock and grain and large sums are being expended for mining operations and general construction. All of this is being felt in the business circles of San Francisco.

In some sections around San Francisco Bay, building permits have exceeded previous records. Real estate transactions in the city have been many during the year and for the first eight months the value of property sold totaled \$88,000,000. No cessation has been noted in transactions lately.

Many merchants have reported that trade has shown substantial gains. Holiday shoppers have already started December sales climbing to respectable totals and later buyers will undoubtedly swell the volume by a much greater amount.

Electrical dealers as well as other merchants not engaged in the business are endeavoring to capitalize on the electrical idea placed in the public mind through the electrical homes displayed in their vicinity. Electrical toys are prominently displayed by department stores and many shop window displays are based around some device electrically operated.

Range sales have slowed up to some extent lately despite the actions of well-trained and experienced selling crews. Competition among manufacturers is keen.

The conduit situation has been relieved to some extent by the arrival of several carloads from eastern manufacturers, but jobbers' and dealers' racks are depleted of the smaller sizes.

Seattle

Perhaps the most encouraging feature of the local situation is the fact that for the first time in months the trans-continental lines into Washington are able to promise relief from the car shortage which has prevented the marketing of much of this year's crops, and has hampered all lines of industry. Cars are coming west in increasing number, and while the supply is yet far below normal, there is basis for hope that the situation will be entirely relieved in the near future.

Building construction in Seattle continues unabated, and the month of November maintained the high building record for the year. To date, the total of building costs is more than \$5,000,000 higher than for the same period in 1921. Residence building has been unusually active, creating a splendid demand for the better class of fixtures and devices throughout new homes, and a tendency on the part of the home-builder to be particular about this part of construction.

There is a continued demand for washers, with splendid prospects for holiday business. This condition also exists in vacuum cleaners and household appliances, particularly waffle irons, toasters, etc., to be used as gifts.

November demand for lamps show an increase over this period of 1921, with slightly decreased prices.

Ranges are moving well, the cost of installation as compared with gas ranges being overcome, because of delays by the gas company in making new extensions.

Los Angeles

Building activity for the last fifteen days of November kept up with the remarkable rate that has been existing in this section for the past few years; during this period there were 28,093 permits issued with a valuation of \$5,677,855, which represents an increase of approximately 25 per cent over the corresponding period of 1921 with 21,346 permits issued for a valuation of \$4,342,787. The building total for the entire month was well in excess of eleven million dollars and represented an increase over the previous month.

Bank clearings for the last half of November amounted to \$235,028,390.16 which compares with the same period of 1921, with \$193,225,907.55 as an increase of approximately 20 per cent.

The sale of electrical appliances in this section and throughout southern California continues unabated and with increases expected. The retail trade for Christmas is expected to assume unheard-of proportions in the sale of both large and small electrical appliances. The only kick that is heard registered in these parts at the present time is the lack of stock on certain appliances. The distributors of washing machines report increased sales. The conduit situation in this section is materially improved, however, and the demand owing to the huge building program continues to exceed the supply.

Electrical supplies are also being sold at a tremendous rate and several large sales of large apparatus are expected in this territory soon. The motion picture industry is very active and is progressing in wonderful fashion, as is indicated by some of the larger producers recently adding materially to their electrical equipment.

The sale of radio apparatus has apparently recovered, for increased sales are reported all along the line and the Christmas trade is expected to swell the volume of radio sales materially.

Portland

The general tone of business in and around Portland is good. Holiday buying is well started and in many lines is expected to far exceed 1921. This applies particularly to electric ranges, washers, cleaners and smaller house-

hold devices. Sales will be limited somewhat by the lack of stocks. Central station buying still continues to form a large part of jobbers' sales. The power companies are working large gangs on extensions to distributing systems.

In the lumber industry indications are very favorable. The year 1922 will probably be the greatest known to the lumber industry in the Northwest. Prices have recently advanced and the tendency is toward a still further increase. Orders from the Orient and Atlantic states show a good increase, and the building trades in general are still very active. The value of the residence building permits in Portland for the month of November were almost exactly what they were a year ago, but the value of all the other classes was 40 per cent ahead of 1921.

A big growth has been shown during the 11 months of this year in Portland's ocean shipments, the gain being 600,000 tons in both entrances and clearances over 1921. Portland's bank clearings for November, 1922, were \$140,138,865 as compared with \$128,828,504 of November a year ago.

Salt Lake City

Throughout the intermountain territory business continues to show signs of improvement, and there does not appear to be any good reason why gains should not continue to be made throughout the winter months.

The mines of Utah are continuing their production at a rapid rate, and some of them are running short-handed due to lack of men.

The farmers have harvested good crops, although they are faced with low prices for the products, and in addition a rather serious car shortage. However, their difficulties are growing less as time goes on. The sugar beet growers have had a prosperous season.

The approach of the winter season has slowed up building operations to some extent, although there is still considerable activity in finishing construction work.

Electrical dealers report a good holiday trade, and this, of course, is reflected in increased business for the jobbers. Merchants in general also report holiday business good.

Denver

Improving business conditions are reflected in the optimism created by the ratification of the Colorado River pact, the supreme court decision upholding the constitutionality of the Moffat tunnel project, the raising of \$625,000 for the first community chest, and a recently announced program of unprecedented building activity.

Electrical jobbers report increasing business attendant on Christmas buying. This is evidenced especially in radio sales developing from the co-operative advertising campaign of radio jobbers. Vacuum cleaner sales are picking up. Wiring devices and schedule materials are being quoted higher with good demand. Christmas tree lighting sets are amply stocked for the increasing demand that may prove equal to business developed last year in this line, it is believed.

Construction News

Buildings (Industrial)

Calif., Long Beach—Blue Tank Pipe Line & Refinery Company of Long Beach, has completed the purchase of a 15½-acre trace in Wilmington as a site for a refinery and pipe line base. Estimated cost, \$900,000. The company owns wells in Signal Hill and will construct a 12-mile pipe line of 6½-in. diameter from the central storage farm to the new refinery.

Calif., Long Beach—Architect and Engineers Truesdell, Purinton & Newton, 304 San Fernando Building, have completed plans and are taking bids for a refrigerating plant to be installed in an ice cream plant being erected at Long Beach, for the Consumers Milk Company.

Calif., Los Angeles—Gay Engineering Corporation, 2659 Santa Fe Ave., has the contract to erect an ice plant on McCadden Place near Santa Monica Blvd. for National Ice & Cold Storage Company. One story, 216 x 67 ft., frame and corrugated iron construction, comp. roofing, structural steel, cork insulation, concrete floor; \$35,000.

Calif., Orange—The Moran Co., 206 Kerckhoff Building are preparing plans and have the contract to erect a 1-story, reinforced concrete factory building in Orange, for the California Cordage Company. Dimensions, 100 x 140 ft., concrete exterior walls, basement, comp. roofing, concrete floors, steel sash, wire and plate glass; power to be furnished by electricity.

Calif., San Bernardino—W. C. Horne Construction Company, Los Angeles, was awarded contract to erect a wholesale building at Rialto and D Streets, for the Southern Terminal Warehouse and Storage Company. Structure will be 2-story with foundation suitable for two additional stories, of reinforced concrete construction throughout. Cost, \$85,000.

Calif., Santa Ana—Shell Oil Company of California plans to establish a gas and oil storage plant and distributing station on the Santa Fe right-of-way. The plant, which will comprise offices, warehouses, garages, etc., will have a storage capacity of approximately 100,000 barrels.

Calif., Los Angeles—The Austin Company, Pacific Electric Building, has the contract to erect a 1-story and part 2-story building at the southeast corner of Washington St. and Stanford Ave., for W. Elmo Reavis. It will be 100 x 145 ft., steel frame and roof trusses, brick walls, comp. roofing, steel sash, metal skylights, cement and wood floors.

Calif., Oakland—Immediate construction of the factory and salesroom for the Hebern Elec. Code Co. will be undertaken. The building is to cost \$300,000 and will be established on Harrison Street, from Eighth to Ninth. P. J. Walker is the builder; Reed & Corlett, architects.

Calif., San Francisco—Richard Hellman, Inc., nationally known manufacturing concern producing Blue Ribbon mayonnaise, will open a branch factory in San Francisco, erecting a building and equipping it at a cost of \$250,000, according to announcement made by Chas. A. Day, director of the industrial department of the San Francisco Chamber of Commerce.

Colo., Denver—Within 30 days the McMurtry Manufacturing Company will erect a four-story fireproof warehouse adjoining the present factory of the company. W. R. McFarland, the president of the company, reports that it will cost about \$60,000. As soon as this unit is completed, it is understood that a similar structure will be built as a glass warehouse.

Ore., Portland—The Pacific Fruit & Produce Company will erect an \$80,000 concrete building for wholesale and jobbing purposes. The building will be on East 2nd Street between Washington and Alder Streets, and will be 100 x 200 ft., one story, full basement and mezzanine floor, equipped with cold storage facilities.

Ore., Portland—A two-story cold storage plant will be added to the National Cold Storage & Ice Company plant, costing about \$80,000, about \$80,000.

Wash., Seattle—The Washington Iron Works has completed plans for the immediate erection of a new gray iron and steel foundry building at 1500 Sixth Avenue South, to cost \$90,000. The building will be 660 x 130 ft., of steel frame construction, equipped with electrical traveling cranes and complete foundry equipment.

Wash., Edmonds—Preliminary surveys are being completed for the new half-million dollar storage plant of the Union Oil Company, to be erected at Edmonds. Two large loading piers, and several large tanks are included in the work.

Wash., Spokane—The Cranston-Brewer box factory, destroyed by fire recently with a loss of \$40,000, is to be rebuilt, the new plant to have all modern improvements and to have enlarged capacity.

Wash., Aberdeen—A two-story warehouse is to be built for A. A. Star Transfer Company at Hume and K Streets and will cost \$45,000.

Wash., Seattle—The Elliott Bay Mill Company plans the construction of a new planing mill at West Spokane Street yard. The building will be 95 x 50 ft., of heavy mill construction.

Wash., Hoquiam—S. P. Mitchel has acquired a site here on which will be erected a factory for the manufacture of baskets, clothespins, broom and mop handles. Mr. Mitchel is president of the Mitchel Manufacturing Company of Dayton, Ohio.

Wash., Centralia—The H. M. Martin Lumber Company is progressing rapidly on the construction of its new sawmill, which will replace the plant destroyed by fire. The new plant will cost \$100,000 and will have a capacity of 100,000 ft. daily, and will be electrically driven throughout.

Buildings (Miscellaneous)

Calif., Los Angeles—Architects Allison & Allison, 1405 Hibernian Bldg., have been commissioned to prepare plans for a 4-story and basement class A department store building at Hollywood Blvd. and Vine St. for Dr. E. O. Palmer. It will be occupied by Broadway Bros. of Pasadena and Hollywood. It will be designed for 6-story slab, brick filled walls, press. brick and terra cotta facing, plate glass, marble and tile work, steel sash, elevators, plumbing, wiring, heating; \$300,000.

Calif., Pasadena—Schools—Architects Allison & Allison, 1405 Hibernian Bldg., have been authorized to proceed with plans for additional buildings at the Washington school site, on Monk Hill, Pasadena. The bonds have been sold. The buildings will include an auditorium, study hall, class rooms, cafeteria and manual arts department; brick construction; \$200,000.

Calif., Fresno—R. F. Felchin & Co., Bank of Italy Bldg., announce a change in the plans for the new Patterson Building, making it an eight-story structure for its entire J St. frontage, 175 ft., instead of for only 75 ft., with the balance three stories as originally planned. This additional work will cost \$200,000, making the total cost of the building \$1,350,000.

Calif., Selma—School—Olcester & Potter, Yuma, Ariz., were awarded the general contract at \$185,300 for erecting a new science building at high school site at Selma, Fresno County; Norman F. Marsh, 211 Broadway Central Bldg., architect. The building will be 3-story, 151 x 141 ft., reinforced concrete construction, stucco exterior, comp. roofing, cast stone trim, metal skylights, pine trim, steam heating.

Calif., Fullerton—School—Architect Carleton M. Winslow, 1134 Van Nuys Bldg., is preparing plans for a new science building at Fullerton High School and Junior College. One-story and part 2-story, basement for heating plant only, 280 x 45 ft., concrete and brick construction, stucco exterior, wood or reinforced concrete, comp. roofing, mastic flooring, quarry tile floors in corridors. Work will also include arcades connecting present science buildings, which will form wings to new buildings.

Calif., San Francisco—Apartments—Plans have been prepared by Henry H. Gutterson, architect, for a community building to be erected on the northwest corner of Sacramento and Mason Streets, at a cost of approximately \$1,000,000, including the site. The structure will be a class A, steel frame building and plans call for five, ten and fifteen to eighteen-room apartments. Clinton Construction Co., contractors.

Calif., Fresno—Bank—Offices—The Fidelity of Fresno branch of the Pacific Northwest Trust and Savings Bank has announced that a new 15-story building is to be erected on Mariposa and J Streets at a cost of \$1,000,000. Construction work will start in 90 days. The building will contain over 200 offices.

Calif., Fresno—Offices—The Sun Maid Raisin Growers have made arrangements with Holland & Holland to lease a new two-story building on L Street. The building will contain an area of 6¼ acres and will cost approximately \$160,000.

Calif., Fresno—Store—The Fresno Hardware Company has announced a plan for erecting a 4-story building on North J. Street at a cost of approximately \$230,000.

Calif., Pasadena—Store—Architect Frederick Kennedy, Jr., 429 Chamber of Commerce Building, Pasadena, is preparing plans for a \$50,000 1-story store building to be erected by Contractor Rowell at the southeast corner of Colorado St. and Los Robles Ave., Pasadena, for Ernest H. Lockwood. Foundation 104 x 185 ft., cement and wood floors, tile toilets and floors, brick and reinforced concrete walls, art stone facing, comp. roofing, steel sash, skylights, plate glass windows.

Calif., Altadena—Store—Karl J. Moller, 375 Del Monte St., Pasadena, has the contract for erecting a \$30,000 1-story, 5-room store building at Mariposa and Lake Sts., Altadena, for F. E. Nelson. B. G. Horton, 750 E. Colorado St., Pasadena, architect. Foundation 130 x 75 ft., brick walls, enameled brick trim, terra cotta coping, cement floors, plate glass windows, comp. roofing.

Calif., San Francisco—Garage—A concrete one-story garage to cost approximately \$75,000 will be erected on the north side of 14th Street, east of Mission, by A. E. Perley.

Calif., San Francisco—Garage—A three-story and basement building is being erected by Louis R. Lurie on Polk Street near Sacramento, to cost in the neighborhood of \$175,000. It will be occupied as a garage, automobile accessories store and automobile paint shop.

Calif., Woodland—School—At a recent election here school bonds amounting to \$90,000 were voted on favorably for a school building at Esparato. Contract will be awarded and construction work started at an early date, as it is hoped to have the building ready for the opening of the new school year in Sept., 1923.

Calif., San Francisco—Lodge—A contract for the construction of a \$100,000 hall for the San Francisco Lodge, Loyal Order of Moose, has been awarded to F. L. Hansen. The building, located at Market and Brady Streets, will be two stories high, of steel and concrete.

Calif., San Francisco—Hotel—The addition of a \$400,000 unit to the Whitcomb Hotel has been announced by D. M. Linnard, lessee of the hotel. The new unit will add 400 rooms. MacDonald & Kahn, contractors, will start work immediately. Other units will be added at a later date.

Calif., San Francisco—Offices—Construction on the Western State Life Building will start early next year. It will be erected at Sixth and Stevenson Streets, just south of the company's present office building. It is planned to throw both buildings together in order to take advantage of a greatly increased floor space. Plans for the new building are in the hands of Reid Bros., architects.

Calif., Bakersfield—Hospital—Bids are being received by Board of Supervisors of Kern County for erecting four buildings with connecting tunnels for Kern general hospital group; Chas. H. Biggar, 405 Bank of Italy Building, Bakersfield, architect. Bids will be taken separately on general contract, excavating, grading and back-filling, plumbing, heating and ventilating, electrical work, elevators, painting, alternate bid on cement concrete brick, refrigeration plant and boxes, kitchen equipment, laundry machinery. Buildings will be of reinforced concrete and hollow tile construction with plaster exteriors and tile roofs. The cost is estimated at about \$500,000.

Calif., Pomona—Bank—Architects Curlett & Beelman, 408 Union Bank Building, have completed plans for a 5-story, mezzanine story and basement, class A bank and office building to be erected at Pomona for the First National Bank of that city.

Calif., Chino—Schools—Architects John C. Austin, 1125 Baker-Detwiler Bldg., and Geo. M. Lindsay, Glendale, assoc., are completing plans for two new grammar schools at Chino. Buildings will contain 8 rooms each; reinforced concrete construction, plaster exterior, clay tile roofs, pine trim, beech floors. Bids will be advertised in about a week. Bonds in the sum of \$117,000 have been voted.

Calif., Los Angeles—Club—The L. A. Athletic Club has purchased the St. Vincent's church property at northwest corner of Washington St. and Grand Ave., as a site for a new and larger club building.

Calif., San Francisco—Schools—Relief Home—At an election held on Nov. 21 school bonds totaling \$12,000,000 and Relief Home bonds totaling \$2,000,000 carried by a large majority. The building program of the board of education contemplates the construction of 30 new schools in all parts of the city, the purchase of additional playground space wherever necessary and expansion of present schools where needed. A comprehensive survey will be started immediately as a basis for a definite plan of rebuilding and expanding. Construction of the first school will probably begin in about a year and bonds will be sold from time to time as the funds are needed. Plans for the new relief home were prepared by Reidmeyer & Howard in 1913. There will be 10 buildings in the group, all to be of the pavilion type, two to four stories in height. Industrial shops have been provided for and in addition there will be a social hall, reading room and chapel. Building will begin about September, 1923. C. N. Woltenberg is superintendent of the relief home.

Calif., Los Angeles—Hotel—Architect A. C. Martin, 430 Higgins Building, is preparing plans for a 3-story class C hotel building on San Pedro St., near 7th St., for N. Canepa; 4 stores, 50 rooms and 4 baths. Brick walls, 65 x 100 ft., pressed brick front, pine and cement floors, O.P.

trim, plate glass, copper store fronts, tiled baths, steam heating system, water heating system, fire escapes; \$50,000.

Calif., Santa Monica—School—Architects Allison & Allison, 1405 Hibernian Building, are completing plans for new Lincoln junior high school at Santa Monica. The entire project will cost about \$350,000. The main building will be erected at present at a cost of \$200,000. It will be 2-story, brick construction, cement plaster exterior, tile and comp. roof, pine trim, maple floors, reinforced concrete stairways and corridors.

Calif., Los Angeles—Club—Architects Allison & Allison, 1405 Hibernian Bldg., are completing plans for the new clubhouse for Friday Morning Club to be erected on Figueroa St., between 9th and 10th Sts. The building will be 6 stories, class A reinforced concrete construction, steel trusses, stone facing for first two stories, cement plaster exterior and stone trim above, hardwood trim, elevators, etc.; \$500,000.

Calif., Hollywood—Hospital—Architect Robert H. Orr, 1305 Van Nuys Building, has completed plans for the new hospital building to be erected on Vermont Ave. near Sunset Blvd., for Hollywood Hospital Assn. Five stories, reinforced concrete construction, main section, 192 x 40 ft., with a wing, 60 x 40 ft.; training school, emergency hospital, dining room and culinary dept. in the first story, executive offices, X-ray dept., maternity dept., operating rooms and rooms for 150 beds in upper stories; stucco exterior, tile and comp. roof, solariums, marble and tile work, steam heating, vacuum cleaning, refrigeration system, 2 elevators; \$300,000. Bids will be taken shortly.

Calif., Santa Barbara—Offices—Stores—Architects L. L. Mayberry, 472 Pacific Electric Bldg., and Kirkhuff & Schaaf, Santa Barbara, assoc., are preparing plans for a 4-story class A addition to the San Marcos Building at Santa Barbara for Hawley estate. It will be 42 x 125 ft. with stores in first story and about 60 offices above; reinforced concrete construction, stucco exterior, comp. roof, plate glass, birch trim, steam heat, compressed air, archrib system of concrete construction, enlargement of present heating plant; \$125,000.

Calif., Napa—Sanitarium—A hospital, to be known as the Atlas Peak Sanitarium, will be established near Capell Valley, seven miles from Napa, by a company recently incorporated for \$300,000. Dr. C. H. Bulson is head of the company. Construction will start next spring.

Calif., Long Beach—Bank—Lange & Bergstrom, Washington Building, have been awarded the general contract at about \$130,000 for erecting a class A bank building at southeast corner of 4th St. and Pine Ave., Long Beach, for First National Bank of that city. It will have a banking room, 75 x 120 ft., and a 3-story section, 55 x 75 ft.; basement under entire building; steel frame construction, brick walls, terra cotta facing, plate glass, reinforced concrete floors, marble and tile work, bronze grilles, passenger and service elevators, vaults. John Parkinson and Donald B. Parkinson, 420 Title Insurance Building, architects.

Calif., Fresno—Lodge—Architect Carl Werner, Santa Fe Building, San Francisco, has been commissioned to prepare plans for a five-story class B Scottish Rite Cathedral costing \$500,000 for Scottish Rite Free Masons, at Stanislaus and L Sts. The Masons of Fresno have just purchased this site, 125 x 150 ft., and instead of spending \$250,000 for a temple for the old site, as planned, will expend double the amount on a cathedral that will include blue lodge, auditorium to seat 1,000, banquet hall, lodge rooms and stores. Plans will be ready to start work in January.

Calif., Rialto—Bank—Work will start at once on the foundations for the new Citizens National Bank Building at N. Riverside Ave. and

West First St. It will be of brick and concrete with stone effect exterior, 30 x 73 ft., with lobby, rest room, deposit vaults, directors' room, etc.

Calif., Santa Barbara—School—Architects W. H. Weeks, San Francisco, and Sauter & Lockard, Santa Barbara, have completed their preliminary plans for the new Santa Barbara high school. Excavation will start this month. The total cost of the completed project will be defrayed by the \$450,000 bond issue voted last March. Advertisement for bids for excavating has been authorized.

Calif., South Pasadena—Store—Architects Marston & Van Pelt, Edgar L. Maybury, assoc., 600 Chamber of Commerce Bldg., Pasadena, are preparing plans for a 2-story English store and theater building to be erected at the corner of Monterey Road and Fair Oaks Ave., South Pasadena. The theater will be operated by Jack Root of Pasadena. Three stores on the ground floor.

Calif., Los Angeles—Bank—Architects Walker & Eisen, 325 Pacific Finance Building, are preparing plans for a 1-story brick bank and store building at 46th St. and Western Ave. for the California Bank. It will contain a branch banking room and a store; dimensions 35 x 80 ft., brick walls, terra cotta facing, plate glass, steel beams, comp. roofing, cement floor, vaults.

Calif., Redondo—A. D. Adkinson has been awarded contract by Redondo Hardware Company to build a two-story brick building on Pacific Avenue, north of the Langer Building.

Calif., Visalia—Trewitt & Shields, Fresno, have started excavating for a 5-story bank building to be erected in Visalia for the Bank of Italy. Contract for the general work has not been awarded. Estimated cost, \$265,000.

Calif., Santa Ana—School—County supervisors will purchase at once 18 acres on N. Flower St., north of Santiago Creek, as a site for a parental school. The school will comprise buildings to be erected by the county, for the care of delinquent children. J. M. Backs, county clerk.

Calif., Modesto—School—Ground for the first unit of the proposed junior college, costing \$75,000, is expected to be broken about Feb. 1.

Calif., Santa Barbara—City Hall—Architects Sauter & Lockard will complete plans for new city hall building in six weeks. The revision of plans made necessary by lack of funds is under way. The cost has been reduced to \$160,000. At its next meeting the council will decide whether segregated bids or complete bids or both will be called.

Calif., Burbank—Schools—Richardson Building & Engineering Company, 1126 Story Building, was awarded the contract at \$19,680 and \$19,200, respectively, for erecting new Joaquin Miller and Abraham Lincoln elementary schools at Burbank. Buildings will contain 4 rooms each; frame and plaster construction, shingle roofs.

Calif., Redwood City—School—Robert Trost, of San Francisco, has been awarded the contract for constructing the Sequoia Union High School for \$210,704.

Calif., San Francisco—Gymnasium—Plans have been announced by the Young Men's Institute for the erection of a gymnasium building of four stories and basement, to be erected on Oak Street, adjoining the present Institute Building; cost, \$150,000. Shea & Shea, architects.

Calif., Orange—Homes—Central Lemon Growers Assn. will expend approximately \$30,000 to erect about 30 homes for Mexican workers and families. The buildings will be placed on a 4½-acre tract directly east of the packing plant.

Calif., San Pedro—Stores—Offices—C. H. Patterson plans to build a 2-story brick business block, 50 x 100 ft., at northeast corner of Sixth and Mesa Streets. Cost, about \$50,000.

Calif., Pomona—Banks—Two bank buildings are planned for Pomona. One of these is the First National Bank's new building for which plans have been prepared and for which bids will be called as soon as the directors have approved them. The other is the American National Bank Building at Second and Garey Sts. The latter building will be 2-story, containing bank on ground floor with offices above.

Calif., Long Beach—City Hall—C. T. McGrew & Sons, 1345 West Ocean Ave., Long Beach, were low bidders and were awarded the contract at \$117,433 for cement finishing four floors and basement, hollow tile partitions, painting, plumbing and wiring, in completing the new city hall building in Long Beach. Ralston Iron Works, San Francisco, agents for the Pauly Jail Cell Co. of St. Louis, was awarded the jail cell contract at \$30,370 on an addition of \$1,360 for using special steel.

Calif., Los Angeles—Apartments—Architects Walker & Eisen, 325 Pacific Finance Building, have been commissioned to prepare plans for a 13-story and basement class A apartment house to be erected at the corner of Kenmore Ave. and Wilshire Blvd. for Paul B. Fletcher and J. B. Lilly, 3rd St. and Western Ave. The site is 155 x 150 ft.; the building will contain about 425 rooms, reinforced concrete construction, pressed brick and terra cotta exterior, fire escapes, marble and tile work, wall beds, steam heat, refrigerating system, vacuum cleaning, elevators, etc.; \$1,250,000.

Calif., Los Angeles—Apartments—Architects Russell & Alpaugh, 1106 Story Building, have completed plans and are taking bids for erecting an 8-story class A apartment house at Wilshire Blvd. and Carondelet St. for Wilshire-Carondelet Holding Company. It will contain 376 rooms, 188 apartments; lobby, ballroom and locker room; dimensions, 135 x 155 ft., reinforced concrete construction, pressed brick and cast stone exterior, hardwood trim, marble and tile work, steam heating, wall beds, 2 passenger elevators, vacuum cleaning, refrigerating system; \$700,000. Bids are being taken separately on general contracting, heating, plumbing, wiring, vacuum cleaning, refrigeration, painting and elevators.

Calif., Huntington Beach—E. Kutzner, Huntington Beach, was low bidder at \$44,150 on the general contract for erecting new city hall building at Huntington Beach; Walker & Eisen, 325 Pacific Finance Building, architects.

Calif., Los Angeles—Offices—A. C. Blumenthal, Loew State Building, representing a syndicate of San Francisco capitalists, has purchased Mercantile Place property, extending from Broadway to Spring Street, between 5th and 6th Streets, and is having sketches prepared by Los Angeles and San Francisco architects for contemplated improvements. It is the intention of the new owners to erect a 12-story class A office building, 50 x 120 ft. on each of the Broadway and Spring St. frontages, to be connected with a 3-story structure to be subdivided into shops. The property is 120 x 326 ft. in size. MacDonald & Kahn, Loew State Building, will be the contractors for the new buildings and work will be started as soon as present leases expire which will be in three months.

Calif., Monrovia—Hotel—Harold Bruce Dunn, 137 So. White Oak Ave., Monrovia, has been commissioned to prepare plans for a \$600,000 class A group of hotel buildings to be erected on Gold Hill at the head of Myrtle Ave., Monrovia, in reproduction of the Indian architecture cliff dwellers settlement in New Mexico, for the Cliff Dwellers Inn Co. Arthur B. Benton, 1548 Sunset Blvd., Los Angeles, consulting architect. The main and supplementary canyon side buildings will be reinforced concrete construction. Main building will be 4 stories, 450 ft. front and 60 ft. deep, containing 100 guest rooms each with bath, dining rooms, lobby, basement.

Secondary group will be of 20 buildings, to contain 10 to 20 rooms each with baths in each room. Other buildings of brick, tile and adobe construction, will include 50 tepees each with bath, 50 wigwags each with bath, hot water heating system plant in separate building, swimming pool 50 x 250 ft., bath house, Mission chapel 50 x 100 ft. at top of group with organ, roof garden. There will be an exterior incline elevator from bottom to top of canyon.

Calif., Los Angeles—Apartments—Architects Monaco & Bordeaux, 913 Bank of Italy Building, are preparing plans for a class C apartment building to contain 70 single apartments and large lobby, at Gower Ave. and Franklin Blvd., for C. A. Keeler. Brick walls, 3-story, plaster exterior, cast stone entrance and trim, tile baths and drainboards, battleship linoleum, hardwood floors, marble work; inter-telephone system, tile and composition roofing, gas steam radiator heating, wrought iron balconies, 1 automatic electric elevator, hardwood and O.P. trim; \$175,000.

Calif., Fresno—Salesroom—Garage—Walter M. Murphy Motors Co. will build an automobile salesroom and garage building at Ventura and Van Ness Streets. Estimated cost \$100,000. One-story, 145 x 140 ft. Equipment will cost about \$50,000.

Calif., Los Angeles—Offices—Architects Dodd & Richards, 905 Brack-Shops Building, are preparing plans for an 8-story and basement class A office building, to be erected at the corner of 6th and Lucas Streets, for physicians' offices exclusively. It will be erected by a cooperative company being organized by Dr. Hill Hastings and associates. It will be 55 x 100 ft., reinforced concrete construction, and will have all modern equipment.

Calif., El Centro—Court House—Architects Don Wells and Ralph Swearington are completing plans and specifications for the \$300,000 court house for Imperial County. It is expected to get work under way within 90 days.

Calif., Los Angeles—Offices—Architects Morgan, Walls & Morgan, 1124 Van Nuys Building, are preparing working drawings for a 5-story class A building at the plant of the L. A. Soap Company on East 1st St., near Alameda St. It will be a combination office and warehouse building, 60 x 270 ft., reinforced concrete construction, plaster exterior, steel sash, steel rolling doors, elevators, etc.

Calif., Los Angeles—Stores—Offices—Bavin & Burch Company, 173 E Jefferson St., have been awarded the general contract at about \$115,000 for erecting a 6-story and basement class A store and office building at southeast corner of 6th and Lebanon Sts., for W. W. Paden and John L. Richardson. Excavation has been completed under separate contract and plumbing and elevators will be let separately. Total cost, \$155,000. Chas. M. Hutchison, 427 Security Bldg., architect.

Calif., Los Angeles—Offices—Architect Roy L. Smith, 804 Higgins Building, has been commissioned to prepare plans and specifications for a 12-story and basement class A office building at northeast corner of Eighth and Spring Streets, for a syndicate represented by Joe Topitzky, H. W. Hellman Building. The building will have a frontage of 51 ft. on Spring and Main Sts. and 120 ft. on 8th St. It will be of reinforced concrete construction with pressed brick and terra cotta exterior.

Calif., San Diego—Institution—Architect W. Templeton Johnson, 508 Timkin Building, is preparing plans for a building to be erected at Seventh and A Sts., to be occupied by the Associated Charities. The ground area is 100 x 100 ft. The cost of the building—\$40,000—is to be defrayed by money donated by Miss Ellen B. Scripps for this purpose.

Calif., Santa Barbara—City Hall—Architects Sauter & Lockard have completed sketches for

new city hall. The designs have been approved but call for an expenditure of \$175,000, or \$25,000 more than available. It is undecided whether this sum can be found to carry out the architects' ideas. The design is in the shape of a capital T, the crossbar fronting on DeLaGuerra St. and being 2-story of Spanish Colonial type, with tiled roof. A portion of the building will be used for police headquarters.

Calif., San Diego—Studios—Grading and excavating for S. L. Studios-San Diego, the new film organization preparing to build motion picture plant at Grossmont, have been completed and actual construction work will start at once. The first stage to be erected will be 90 x 256 ft., 40 ft. high. This is the first of a 10-unit plant to be erected. E. J. Shulter, technical director. Arthur H. Sawyer is president, and George D. Baker, director general.

Calif., Santa Barbara—School—Santa Barbara high school board will advertise for bids within a few weeks for construction of a group of new high school buildings for which plans have been completed by Architect William H. Weeks, 369 Pine St., San Francisco. Plans have been approved. The group as planned will cost about \$350,000.

Calif., Fresno—Store—R. F. Felchin Company, architects and engineers, have secured a permit for the erection of the 3-story business building which is to be built by Hugh Sparkman for the Barker Bros. Furniture Company. Estimated cost, \$105,000.

Calif., Los Angeles—Hotel—Architect J. A. Larralde, 1401 Stock Exchange Building, has prepared preliminary plans for a 9-story class A hotel building at northwest corner of Cherokee Ave. and Hollywood Blvd., for Geo. M. Hull and Gordon L. Friedman, 320 Chapman Bldg. Dimensions, 105 x 90 ft., 250 rooms, each with private bath, two elevators; probably reinforced concrete construction; \$300,000. Negotiations for a tenant are under way.

Calif., Riverside—Salesrooms—C. A. Dundas (Glenwood Mission Garage) plans to build a new salesroom for the Studebaker agency on West 7th St., opposite his present location. It will be 70 x 35 ft., plate glass, special lighting and display fixtures, concrete floors, etc., to complete first-class salesroom and garage building. Total cost estimated at \$50,000.

Calif., Long Beach—Apartments—Fred Butterfield, designer and builder, Long Beach, is completing plans for a 4-story frame apartment building to be erected at the corner of Chestnut Ave. and 4th St., Long Beach, for a cooperative selling group headed by Val Lester. Forty-seven apartments; stucco exterior, comp. roof, solarium, automatic elevator, radio room, social hall, community kitchen, dumb waiters, showers, incinerators, disappearing beds, tile baths, billiard room, central heating and refrigerating plants, plate glass windows, electric laundry.

Calif., Los Angeles—Apartments—Scotfield Engineering Construction Company, Pacific Finance Building, has been awarded a contract on a percentage basis for erecting a 4-story and basement class C apartment house at the corner of Cahuenga Ave. and Hollywood Blvd. for Leach Cross. Walker & Eisen, 325 Pacific Finance Building, architects. The building will contain 172 rooms, 90 apartments; 100 x 160 ft., brick walls, pressed brick facing, cast stone trim, comp. roofing, pine and hardwood interior trim and floors, marble and tile work, two elevators, wall beds, tile bathrooms, steam heating; \$350,000. The project was financed by S. W. Straus & Company, Merchants National Bank Building.

Calif., Fresno—Stores—Offices—R. F. Felchin & Co., Bank of Italy Building, have completed plans for a 2-story and office building to be erected at L and Fresno Streets, Fresno, for Hollaud Bros. The ground floor will contain stores and the second story, offices.

